



SIERRA LEONE

Annual Report

OF THE

LANDS AND FORESTS DEPARTMENT

FOR THE YEAR

1923.

FREETOWN.

Printed at the Government Printing Office
SIERRA LEONE

1924.

Annual Report

OF THE

LANDS AND FORESTS DEPARTMENT

FOR THE YEAR

1923.

Annual Report

OF THE

LANDS AND FORESTS DEPARTMENT

FOR THE YEAR

1923.

FROM THE COMMISSIONER OF LANDS AND FORESTS
TO THE HONOURABLE THE COLONIAL SECRETARY, FREETOWN.

SIR,

I have the honour to submit herewith the annual report of this department for the year 1923.

2. This department now comprises the following divisions:—

- (a) HEADQUARTERS—ADMINISTRATIVE.
- (b) DIVISION OF RESEARCH.
- (c) DIVISION OF AGRICULTURE.
- (d) DIVISION OF FORESTS.
- (e) PLANTS AND PRODUCE INSPECTION.

3. The staff of the department at the end of the year under review was as follows:—

HEADQUARTERS—ADMINISTRATIVE.

Head of Department:

| | | | | |
|-----------------------------------|-----|-----|-----|------------|
| Commissioner of Lands and Forests | ... | ... | ... | M. T. Dawe |
|-----------------------------------|-----|-----|-----|------------|

Clerical Staff:

| | | | | |
|---|-----|-----|-----|-------------------|
| First clerk | ... | ... | ... | F. W. Hooke |
| Second clerk | ... | ... | ... | G. B. D. Campbell |
| Third clerk | ... | ... | ... | C. A. Wilson |
| Fourth clerk | ... | ... | ... | W. O. F. Horman |
| (Clerk on Special British Empire Exhibition Duty) | ... | ... | ... | F. Fofana |
| Keeper of Economic Collections | ... | ... | ... | Vacant |

DIVISION OF RESEARCH.

| | | | | |
|----------------------|-----|-----|-----|--------|
| Agricultural Chemist | ... | ... | ... | Vacant |
| Laboratory Assistant | ... | ... | ... | Vacant |

DIVISION OF AGRICULTURE.

| | | | | |
|--|-----|-----|-----|-----------------|
| Director of Agriculture | ... | ... | ... | D. W. Scotland |
| Agricultural Instructor | ... | ... | ... | J. H. Hunter |
| Provincial Superintendent of Agriculture | ... | ... | ... | J. W. D. Fisher |
| Superintendent of Experimental Farm, Njala | ... | ... | ... | S. L. Moseley |

District Agricultural Assistants (African):

| | | | | |
|--------------------------|-----|-----|-----|--------------|
| First and Second Grades | ... | ... | ... | Vacant |
| Third Grade | ... | ... | ... | C. B. Sandy |
| " | ... | ... | ... | W. D. Sannu |
| " | ... | ... | ... | E. I. Smith |
| " | ... | ... | ... | A. Camara |
| Fourth Grade | ... | ... | ... | C. A. Tucker |
| " | ... | ... | ... | E. Musa |
| " | ... | ... | ... | J. M. Coker |
| Agricultural Apprentices | ... | ... | ... | Eight |

Clerical Staff:

| | | | | |
|--------------|-----|-----|-----|--------------|
| First clerk | ... | ... | ... | M. H. King |
| Second clerk | ... | ... | ... | J. E. Farmer |

DIVISION OF FORESTS.

| | | | | | |
|---|-----|-----|-----|-----|-----------------|
| Conservator of Forests | ... | ... | ... | ... | Vacant |
| Senior Assistant Conservator of Forests | ... | ... | ... | ... | K. G. Burbridge |
| Assistant Conservator of Forests | ... | ... | ... | ... | E. Macdonald |
| Assistant Conservator of Forests | ... | ... | ... | ... | D. G. Thomas |

(The full native staff is given in Part III.)

DIVISION OF PLANTS AND PRODUCE INSPECTION.

| | | | | | |
|---------------------------------|-----|-----|-----|-----|-------------|
| Inspector of Plants and Produce | ... | ... | ... | ... | G. Tuach |
| Sub-inspector of Produce | ... | ... | ... | ... | S. T. Maddy |
| " | " | ... | ... | ... | L. Inga |
| " | " | ... | ... | ... | B. Fabundeh |

HEADQUARTERS—ADMINISTRATIVE.

4. The first part of this report deals with the administration and work of the department for the year, and the general situation in regard to agriculture and its development in the Colony and Protectorate. The Commissioner of Lands and Forests was in charge of the department throughout the year.

DIVISION OF RESEARCH.

5. Unfortunately, it was found impossible to find a suitable officer to fill the post of Agricultural Chemist, consequently there is no report for the year under this division.

DIVISION OF AGRICULTURE.

6. Part II of this report, which is drawn up by the Acting Director of Agriculture and sectional officers, deals with the work of the year of the Division of Agriculture. The headquarters of this division is the Njala Experimental Station, which lies on the Taia River, six miles from the little busy trading town of Mano, which is situated on the Sierra Leone Railway in the Moyamba District of the Central Province. The Director of Agriculture, Mr. D. W. Scotland, was on vacation leave from the 1st November. Mr. J. W. D. Fisher, Provincial Superintendent of Agriculture, was also on vacation leave from 16th May to 29th September. The Agricultural Instructor, Mr. J. H. Hunter, was appointed on 27th December, but did not take up his duties until early in 1924.

DIVISION OF FORESTS.

7. Part III deals with the work of the Division of Forests, which has been prepared by Mr. D. G. Thomas, Assistant Conservator, who was the senior forest officer on duty at the end of the year. The post of Conservator of Forests was not filled owing to economic reasons. The Senior Assistant Conservator, Mr. K. G. Burbridge, was on vacation leave from the 26th December. Assistant Conservator, Mr. E. MacDonald, was on vacation leave from 8th August onwards, and Assistant Conservator, Mr. D. G. Thomas, was invalided on 27th June and returned on the 8th December.

DIVISION OF INSPECTION.

8. Part IV deals with produce inspection, especially as regards palm kernels, and is drawn up by the Inspector of Plants and Produce, Mr. G. Tuach, whose headquarters are in Freetown, but who, together with his three African assistants, is principally engaged on itinerant inspection duties in the Protectorate. Mr. Tuach was on vacation leave from 16th May to 13th October.

ADMINISTRATIVE.

9. In my report for 1922 I dealt with the reorganization of the department as appeared to me desirable from a knowledge of the agricultural conditions of the Colony and Protectorate, gained from but a few months' service. Since that time, however, I have travelled through the greater part of the Protectorate, and have had an opportunity of studying local conditions in all aspects at different seasons of the year. What I wrote in my last annual report on the necessity for a Research Chemist I can now emphasize, and I hope that every effort will be made to fill the post as soon as possible.

TOURS.

10. As mentioned, I have during the year toured the greater part of the Protectorate, and was absent from Freetown, travelling through the Southern Province, from 9th February to 15th March. On 17th May I left for the Northern Province and was on tour travelling through the Northern and Central Provinces until 15th August. I again visited Port Lokko and Bo on the occasion of the agricultural shows held in December.

AGRICULTURAL INSTRUCTION.

11. As a result of these journeys, I have put forward various proposals for the encouragement and development of agriculture and for the further reorganization and strengthening of the agricultural division of the department. One of the questions which impressed me very much on these journeys was the need of the people for practical instruction. Their methods of farming are primitive and their knowledge of the elements of agriculture very limited. Sierra Leone is, however, an agricultural country, there are no mines or minerals, and the country therefore depends for its development on agriculture—increased production of marketable produce. On the 16th March, I wrote you as follows on this subject:—

“ There are undoubtedly great possibilities of agricultural development in the Protectorate, but I am convinced that progress will only be *pro rata* with the adequacy and efficiency of agricultural instruction imparted to the chiefs and people.

“ The chiefs, especially the more educated, seem to me to be willing to grow any crop which the Government advises them to grow; they appear to have confidence in the recommendations of the Government, and consider that the advice given is for their good. If this impression is correct, it is a promising foundation on which to build. A most profound ignorance, however, exists in regard to the cultivation of exotic crops. The most deplorable mistakes are often made in their attempts to grow such crops and the results are frequently miserably incommensurate with the efforts expended. The native must be taught, he must be led to change his custom of growing mixed crops haphazard to growing crops on proper plantation lines. There are two methods of affording the necessary agricultural instruction, which are:—

“(a) By providing agricultural instructors to travel the chiefdoms and give instruction at the various villages; and

“(b) By teaching agriculture to the children in the rural schools.

“ The former is the method which we must look to for more immediate results, since the education of the young will take years to accomplish and competent teachers have yet to be trained. The position, therefore, calls for an increase in the number of apprentices we at present have in the Division of Agriculture and for their more efficient education.”

On the 29th March, 1923, referring again to this subject, I wrote you further as follows:—

“ In my memorandum of the 16th I referred to the need of agricultural education in the Protectorate, and I am convinced that it will repay this Government in increased trade and exports, if properly trained agricultural assistants and instructors are provided for on a liberal scale. What is needed is practical instruction to the individual in the cultivation and preparation of exportable crops in the chiefdoms and villages. The ideal I desire to aim at is to have an African agricultural assistant or instructor in every district and a European officer in charge of each province. It is necessary, however, to exercise more care in the selection of apprentices in the future, and it is essential that they should have a more efficient training. At present they have no theoretical training whatever. I grant that our aim should be to turn out practical men, but it also is essential that they should have an efficient training in the theoretical principles of agriculture in its varied branches. In my memorandum on the Njala Agricultural College I placed the theoretical training of the apprentices as the second most important function of the college.”

Again on the 16th April I set forth the desirability of improving the status and of regrading the African agricultural staff so as to place agriculture on a proper footing in the Government Service, in order to attract the best educated youths of the country to the agricultural profession. I also recommended an immediate increase in the number of apprentices, so as to ensure future provision for an agricultural assistant for each district, and also that the allowance paid to them during their apprenticeship be increased from £25 to £40 per annum, in order to attract the right kind of candidate. I further recommended the immediate appointment of an European agricultural instructor whose duties would be to train the existing native staff, and the additions to that staff proposed by increasing the number of apprentices, as well as the pupils of the Njala Training College. I am very glad that His Excellency the Governor supported these proposals, and that they were readily sanctioned by the Secretary of State, as I feel that this is a stepping stone to progress and will contribute to the future development of agriculture throughout the country. Our native agricultural officers have hitherto been styled

"Overseers" and the highest salary they could aspire to was £81. They are now styled "District Agricultural Assistants," and commence at the fourth grade at £50 and go up in the first grade to £250 per annum.

EXPERIMENT STATIONS.

12. We have had for many years the Njala Experimental Farm, the Batkanu Experimental Station, the Yongro coco-nut plantation, and more recently the Zimmi Model Plantation. The first is necessary and similar stations should be established in each province when European superintendents are available to place in charge of them. But to attempt, with our present staff, experimental work at district stations like Batkanu is to court failure, as our native assistants are not yet sufficiently trained to be able to conduct crop experiments on scientific lines. I therefore consider it advisable to limit the work at such district stations to demonstrations in the proper methods of planting and cultivation of crops known to be suitable to the district. The Yongro coco-nut plantation has suffered severely from the scale pest and has served no useful object, and is now closed down as a Government station. Batkanu is also to be retained merely as a demonstration station. Comparatively few, however, of the one and a-half million inhabitants of the Protectorate visit these experimental stations, and it is obvious that if we are to develop the agricultural resources and possibilities of the remoter parts of the 27,000 square miles of Protectorate lands, we must take more definite measures to get into direct touch with the people.

AGRICULTURAL SURVEY.

13. In my last annual report I touched on the necessity for an agricultural survey of the country. The Director of Agriculture commenced this work in November, 1922, and continued it in January of the year under review. My own journeys have also contributed to our knowledge of this important subject. I hope, in course of time, to have particulars available of the character of the lands, and the crops for which they are suitable, not only in reference to each district, but also each chiefdom.

ENCOURAGEMENT OF NATIVE PLANTATIONS.

14. It is not necessary, however, to wait for a complete agricultural survey of the country, or until we can command a full staff of district agricultural assistants and instructors, to initiate a forward agricultural policy, since we already know what crops are appropriate and can be advantageously grown in certain districts and can apply such staff as exists to the instruction of the chiefs and people. A special effort has therefore been made during the year to encourage the chiefs and people to take up as far as possible, on proper plantation lines, the cultivation of export crops for which their lands may be particularly suitable. The Government has supplied the seed and the chiefs and people the labour, and the provincial and district commissioners have cordially assisted in furthering these projects by general propaganda. The district agricultural assistants visit the chiefs and the people, advise them in the selection of land and instruct them in the methods of laying out the plantations or fields. There was some diffidence shown at first, but as soon as the people realized that the fields or plantations or plots are their own property and the crops their own for disposal in the open market, they have willingly given the projects their support. The projects which have been given special attention during the year are the following:—

- (a) Swamp rice cultivation on the banks of the tidal rivers and in swamp areas.
- (b) Cacao cultivation, especially in the Southern Province.
- (c) Coco-nut planting in the littoral belt of the Southern Province and on Sherbro Island.
- (d) Cotton cultivation, particularly in the north and east of the Protectorate.

SWAMP RICE.

15. Swamp or wet rice is placed first in the list, since rice is the staple food of the country, and the first essential to economic development is to ensure adequate production of the food of the people. A market can always be found for Sierra Leone rice in other West African ports, so there is never any difficulty in finding a market for any surplus. The difficulty has, in past years, been to prevent the export of rice to other West African ports when insufficient has been produced for home consumption. As I pointed out last year, the bulk of the rice produced in Sierra Leone is hill or dry rice, and the cultivation of hill rice in the interior has been responsible for the destruction of much valuable forest. The swamp areas have, until recent years, especially in the Southern Province, been regarded as waste lands, so that their cultivation will not only turn these hitherto uncultivated lands into account, but will render less necessary the cultivation of hill rice

on upland farms, since, unlike the upland rice fields, they can be cultivated successively year after year. Another point in favour of swamp rice is that it is more productive than upland, and generally of better quality, while it is not so susceptible to the vagaries of the climate as the kinds which are dependent on the rainfall. A large quantity of paddy or seed rice has been supplied free to rice growers in the Southern Province for the extension of rice cultivation, and it is hoped that within a few years the production will be so increased that there will be a considerable surplus for export.

CACAO.

16. The scheme for cacao growing is not a new one, it having been initiated by the former Agricultural Department some ten or eleven years ago. During the war, however, the cultivation was neglected. The province and the cacao growing project are fortunate in having as the Commissioner of their destinies Mr. H. Ross, who has had experience in the cacao growing region of the Gold Coast, and who has been, and is, indefatigable in fostering the cultivation of this crop. With the assistance of two agricultural assistants, a-quarter of a million of cacao plants have been raised at stake in the village plantations and a very large number of seeds have been sown in nurseries for planting in 1924. The export of cacao for 1923 was only twenty-nine tons valued at £1,004, twenty-two of which were shipped from Sherbro, but it is hoped that this will be very considerably increased in the course of a few years. The Agricultural Assistants, Messrs. Sandy and Meama, are systematically visiting the different villages and assisting in the selection of suitable sites for plantations and also in laying them out, as well as giving instruction as to their care and to the fermentation of the bean.

Cacao is also being cultivated in the Central Province, but to a lesser extent, and it is doubtful if the conditions are so suitable generally as in the Southern Province.

COCO-NUT PLANTING.

17. Although the coco-nut palms in the Colony have been badly attacked by the scale pest, the palms in the Southern Province have so far escaped and they seem to thrive in the southern parts of the littoral belt better than in the northern. There seems no reason why coco-nut palms should not be extensively grown in the Southern Province for the production of copra. At present they are not grown extensively and the nuts are merely grown for consumption in times of scarcity. During the year Agricultural Assistant A. Camara has travelled through the littoral belt of the Southern Province and indicated suitable lands for plantations. Seed nuts have been purchased by the Government and given to the people, and nurseries have been established in suitable centres for planting out in 1924. Some 8,000—9,000 nuts have been sown and provision is being made for much more extensive nurseries in 1924.

COTTON GROWING.

18. While on my journeys in the Protectorate it struck me that commercial cotton might be successfully grown in the northern and eastern parts of the Protectorate. It is common knowledge that the natives have grown indigenous cottons from time immemorial and have spun and woven their own garments from such cotton. These are, however, short stapled varieties which are not much in demand in Manchester. Seed of Allen Long Staple Cotton was therefore imported from Nigeria and distributed in 1923, but unfortunately it reached the hands of the growers too late in the season for successful results. In a few localities, however, quite good cotton was grown, which received excellent reports from the British Cotton Growing Association. Arrangements have since been made to import a further quantity of Allen Long Staple for more extended trials, particularly in the Koinadugu and Konno Districts. The services of Mr. During, who has had previous experience in cotton cultivation in other countries, have been engaged as special cotton instructor to instruct the chiefs and people and to supervise the experimental planting in the Konno and Koinadugu Districts. The Commissioners of both the Central and Northern Provinces are taking a keen and active part in interesting the natives in the production of commercial cotton.

The British Cotton Growing Association attempted in 1901 to establish cotton growing in Sierra Leone at Moyamba and at Bonthe, and after a six years' trial gave up cotton as a crop for Sierra Leone. Their experiments were, however, conducted on the coastal zone where the rainfall is excessive for cotton, and it is hoped that in the granite lands of Konno and Koinadugu, where the rainfall is considerably less and the land better drained, its cultivation will prove successful.

SISAL.

19. In addition to the special planting projects mentioned, a considerable number of sisal and Mauritius hemp bulbils have been distributed in the mountain villages of the Colony in order to encourage the planting of these important fibre plants and the establishment of a domestic fibre industry, as recommended in my Colony report published as Sessional Paper No. 4 of 1923.

MAIZE.

20. Several bags of South African maize of good export varieties have been imported from the Cape and distributed to the Colony and Protectorate farmers. If it is proved that maize of these varieties can be successfully grown towards the end of the rains to ripen in the dry season, it is probable that maize might be grown as an export crop, since we are but ten days from Europe.

INVESTIGATIONS.

21. During the year the department has kept in close touch with the Imperial Institute, the Royal Botanic Gardens, Kew, and other institutions. A large number of produce samples have been sent to the Imperial Institute for investigation and report: the reports furnished have usually been sent to the local Chambers of Commerce and published in the "Royal Gazette," so there is no need to detail the results in this report.

I may mention, however, that this department furnished a supply of Gorli seed (*Oncoba echinata*) to the Wellcome Chemical Research Laboratories in London for the extraction of chalmougic oil and the preparation therefrom of the ethyl esters which is now being employed as a specific for leprosy, and that Dr. Henry, the Director, has furnished the department with a supply for trial in leprosy cases in Sierra Leone, which has been passed on to the Medical Department.

The botanical collections made on my journeys, and by the staff, have added very considerably to our knowledge of the Sierra Leone Flora; these collections will prove of great value to Kew in the compilation of the "Flora of British West Africa," which is now being prepared by Dr. Dalziel.

AGRICULTURAL SHOWS.

22. In order to stimulate an interest in agriculture amongst the natives an agricultural show was organized in each of the three provinces. The first was held at Port Lokko in the Northern Province on 14th December, the second at Bo in the Central Province on 18th December and the third, which was held at Sembahun, in the Southern Province, was deferred until January, 1924. The Port Lokko and the Bo shows were very successful, and the quantity and quality of exhibits in both shows much exceeded all expectations. The attendance was very large, some forty-one paramount chiefs with their followers attended the Port Lokko Show, and forty-nine the Bo Show. The exhibits of machinery, and the demonstrations in the preparation of palm oil, coffee pulping and hulling, fibre extraction, rice threshing and winnowing, the preparation of ginger and the fermentation of cacao, were of considerable educational value. Never before had these agricultural shows been held on so grand a scale, nor had they been so widely attended by the chiefs and natives or by the public generally. It is considered advisable, however, that in future, only one Provincial Show should be held a year, as it entails too big a drain on the people to travel long distances to the show each year, as well as too much an inroad on the time of the political and agricultural officers to organize three large shows in the same month each year.

CATTLE FARMING.

23. Cattle farming is not carried on in Sierra Leone except on a domestic scale, small herds being kept by the chiefs, principally in the Northern Province. The Colony and some towns of the Protectorate depend entirely on French Guinea for cattle for consumption. I believe that the time has come when the Government should establish a cattle farm and make a serious effort to develop the cattle industry in the Protectorate. Sierra Leone ought at least to produce its own beef and to supply passing steamers. Cattle farming would bring its attendant advantages to general agriculture, provide cattle for ploughing and transport and manure for the farms. On this subject, however, I have already rendered a separate memorandum.

BRITISH EMPIRE EXHIBITION.

24. This department has, during the latter part of the year, given a good deal of attention to the collection of exhibits for the Sierra Leone section of the British Empire Exhibition. The agricultural division has provided, or obtained, most of the agricultural produce, and the forestry division the forest products, including the timber for the construction of the doors and windows of the Sierra Leone Pavilion, and for the furniture made by the Public Works. Moreover, the department has been charged with the work of receiving, storing, packing and forwarding the exhibits received from the provinces, which has taken up a good deal of time and attention of the staff.

FORESTRY.

25. The year has also seen changes in the Division of Forests. Early in the year I asked Mr. K. Burbridge, the Senior Assistant Conservator, if he could recommend a scheme for the decentralization of forest administration, which would place the general management of reserves and restricted areas within a definite area under the charge of an assistant conservator and relieve my office of much of the detail work associated with forest control. On 25th April he submitted a scheme. He proposed dividing the Colony and Protectorate into four geographical areas, or working circles as he called them, the northern, southern, eastern and western. Each circle to be in charge of an assistant conservator, who would be responsible for the care of the reserves and restricted areas within its limits, as well as any further reservation work, or the stocking or working of the forests. This scheme has been approved, and also the addition of a further assistant conservator to take charge of the fourth circle.

The western circle has been placed in charge of the Senior Assistant Conservator, Mr. Burbridge, with headquarters at Mabang. The eastern is to be in charge of the new assistant conservator being appointed, with headquarters at Kennema. The northern has been placed in charge of the Assistant Conservator, Mr. Thomas, with headquarters at Makeni, and the southern in charge of Assistant Conservator, Mr. MacDonald, with headquarters at Gorahun.

RESERVATION WORK.

26. The work of this division has been fully dealt with in the report (Part III) furnished by the Assistant Conservator, Mr. D. G. Thomas. As he points out, the year has been the most successful on record in so far as reservation work is concerned, an area of 159.53 square miles having been added to reserves during the year. Of this the Gola Forest in the Southern Province accounted for 114.85 square miles, and its demarcation within one season is due to the excellent work of Messrs. Burbridge and MacDonald, who continued the survey throughout the rainy season, often in the face of much discomfort and difficulty.

TIMBER.

27. Although timber extraction has not been commenced on systematic lines, a quantity of timber has been extracted from the Kambui Reserve, for supply to the Gambia administration and for Government departments, as well as for the British Empire Exhibition.

A shipment of monkey-apple timber (*Anisophyllea laurina*) has been made to test the English market as to whether it may have any value as a fancy wood. Apart from this, extraction of timber has been confined to the sale of trees under licences from the Colonial reserve.

GUM COPAL.

28. The gum copal reserves and restricted areas were opened for tapping on 3rd October and 115 licences issued. The year 1924 should therefore see a considerable export of gum copal.

The plantations of gum copal have been further extended during the year, and the existing plantations have been cleaned up, other trees having been felled.

STOCKING OF FOREST AREAS.

29. Further survey work has been done in the examination of the stands of timber in the Kambui and Gola Forests with the view to the systematic working of these forests later on.

NURSERIES.

30. The Kennema nurseries have been maintained and a large supply of young trees distributed.

PRODUCE INSPECTION.

31. Part IV comprises a report by the Inspector of Plants and Produce on the Division of Produce Inspection, the only division of the department whose revenue exceeds its expenditure.

PALM KERNELS.

32. The principal work of this division is the inspection of palm kernels under the "Native Produce Ordinance, 1917." Reports received from different firms show that, as the result of inspection, the quality of the kernels exported from Sierra Leone has increased very considerably. As long ago as March, 1923, I received the following from one of the principal exporting firms:—

"*Kernels.*—Per last mail we received a new rating for expenses on kernels, and our Head Office states:—

'the oil contents have been increased from 47 to 48 per cent., due to the improved quality of Sierra Leone kernels.'

"The basis for oil content is 49 per cent. and for each unit under this basis, $1\frac{1}{2}$ per cent. is discounted from the market price. Therefore $1\frac{1}{2}$ per cent. is now being deducted instead of 3 per cent. when the allowance was 47 per cent. On a market price of £20 it means 6s. per ton."

The export for the year was the highest on record, viz., 59,545 tons valued at £968,797, or say a little over £16 per ton, average price for the year. I understand that even better reports have been received than the one quoted, but taking the market price at £16 per ton the premium would be instead of 6s., 4s. $0\frac{1}{2}d.$ or on a total export of 59,545 tons at the value of £16, the trade benefits by inspection to the extent of £14,290.

STANDARDIZATION AND GRADING OF PRODUCE.

GINGER.

33. One of the first questions which attracted my attention on touring the Colony in 1922 was the very poor quality of ginger produced as compared with Jamaican ginger, and in 1923, well in advance of the ginger season, my department started a vigorous campaign to induce the growers to clean and prepare their ginger properly for the market.

I sent the Inspector of Plants and Produce around to visit the farmers in the ginger growing districts of the Protectorate, to give practical demonstrations in the proper methods of peeling, drying and bleaching of the root.

We had hoped that this propaganda would have been backed by legislation enforcing the proper preparation and grading of ginger, but difficulties arose, and certain of the merchants and traders, knowing that the Bill was postponed, made no difference in the price offered, and the good work done by propaganda in the beginning of the season was undone towards the close when the traders told the growers they need not carry out the advice of the Government and that they would be paid one price for the ginger even if brought in as formerly.

Excellent reports have been obtained in the United Kingdom, and in the United States of America, on the higher quality and value of the ginger which was prepared according to the advice of this department, and it is to be regretted that there was any relaxation of effort last season.

Owing to some delay in submitting my annual report, I am able to include the export figures for the first six months of 1923 and the corresponding period of 1924,

which show that the quantity exported this year is much in excess of last year and that the price obtained during 1924 was very much higher than in 1923.

| Month. | 1923. | | 1924. | |
|-----------------|-----------|--------|-----------|--------|
| | Quantity. | Value. | Quantity. | Value. |
| | Cwt. | £ | Cwt. | £ |
| January | 6 | 5 | 7 | 4 |
| February | 2,810 | 4,566 | 2,092 | 4,802 |
| March | 8,052 | 14,571 | 12,772 | 33,439 |
| April | 12,180 | 17,045 | 9,238 | 27,287 |
| May | 4,175 | 8,788 | 10,501 | 28,928 |
| June | 495 | 999 | 1,768 | 4,496 |
| Total | 27,718 | 45,974 | 36,378 | 98,956 |

It is hoped that the proposed bill for the standardization and grading of produce will be passed during the present session.

FINANCIAL.

34. The following is an abstract of the revenue and expenditure for 1923:—

(a) Revenue.

| | £ | s. | d. | £ | s. | d. |
|---|-------|----|----|-------|----|----|
| By Produce licences | 1,112 | 7 | 3 | | | |
| „ Fines (contravention of Produce Ordinance) | 201 | 0 | 0 | | | |
| „ Timber licences | 50 | 6 | 0 | | | |
| „ Gum copal licences | 77 | 10 | 0 | | | |
| „ Sale of produce | 17 | 15 | 0 | | | |
| „ Sale of agricultural implements | 45 | 16 | 3 | | | |
| | | | | 1,504 | 14 | 6 |

(b) Expenditure.

| | £ | s. | d. | £ | s. | d. |
|----------------------------|-------|----|----|--------|----|----|
| Personal emoluments | 9,725 | 1 | 11 | | | |
| Other charges | 6,228 | 0 | 11 | | | |
| | | | | 15,953 | 2 | 10 |

In conclusion, I desire to express my grateful thanks to the officers, European and African, who have afforded me their willing and valuable assistance throughout the year.

I have the honour to be,

SIR,

Your most obedient servant,

M. T. DAWE,

Commissioner of Lands and Forests.

WEMBLEY,

1924.

PART II.

FROM THE ACTING DIRECTOR OF AGRICULTURE
TO THE COMMISSIONER OF LANDS AND FORESTS.

SIR,

I have the honour to submit the annual report for the year 1923 on the Division of Agriculture.

I—STAFF.

2. The Director of Agriculture, Mr. D. W. Scotland, proceeded on vacation leave on 1st November and was on leave at the close of the year. From 3rd May until 3rd September he was stationed in Freetown acting as deputy for the Commissioner of Lands and Forests, who was touring for a considerable part of the time in the Protectorate.

The Assistant in the Agricultural Department, Mr. J. W. D. Fisher, was stationed in Freetown from 1st January to 10th April. He toured in the Northern Province during April and May. He proceeded on vacation leave on 16th May and returned to the Colony on 29th September. He was granted an extension of one month's leave on medical grounds. He acted as Director of Agriculture from 29th October until the end of the year.

THE AGRICULTURAL INSTRUCTOR, NJALA.—Mr. J. H. Hunter was appointed by the Secretary of State for the Colonies to this post on 27th December. He had not taken up his duties at the close of the year.

SUPERINTENDENT OF THE EXPERIMENTAL FARM.—Mr. S. L. Moseley was on duty at Njala throughout the year. While the Director of Agriculture was in Freetown, he acted as officer-in-charge, Njala, from 3rd May until 3rd September.

3. A reorganization of the European and native staffs was approved by the Secretary of State for the Colonies. The staff under the new scheme consists of:—

Director of Agriculture
European Provincial Superintendents of Agriculture, four
European Agricultural Instructor, Njala
Native Agricultural Assistants of four grades as follows:—

| | | |
|----|---------------------------------------|--------------|
| 3 | Agricultural Assistants, first grade— | £150-10-£250 |
| | “ “ second grade— | £108-9-£144 |
| 13 | Agricultural Assistants, third grade— | £60-10-£90 |
| | “ “ fourth grade— | £50-5-£60. |

At the close of the year the European staff appointments had not been filled, while the native staff consisted of six agricultural assistants, third grade, and three fourth grade.

4. APPRENTICES.—At the commencement of the year there were five apprentices in the division, three of these, C. A. Tucker, J. M. Coker and E. Musa, were later appointed fourth grade Agricultural Assistants, while the services of two, J. Yoko and E. A. O. Davies, who failed to pass the departmental test examination, were terminated.

It was decided to increase the allowance paid to apprentices to £40 per annum in order to attract a suitable class of youth. Examinations were held at Bo and in Freetown for the selection of seven candidates. As a result, the following youths were appointed:—Mohammed Sheick, Emanuel Wilson, S. Bull, Beah Konjoh, Abel Campbell, E. A. Thorpe and Hingha Pokie. Rice Instructor J. S. Borbor was selected to fill the eighth apprenticeship on 1st September.

II—REVENUE AND EXPENDITURE.

5. The total receipts amounted to £17 15s. This was realized from the sale of seedlings, plants and farm produce.

6. The expenditure during the year was as follows:—

| | | | | Estimated. | Actual. | | |
|-------------------------|-----|-----|-----|---------------|---------------|----------|----------|
| | | | | £ | £ | s. | d. |
| (a) Personal emoluments | ... | ... | ... | 3,671 | 3,462 | 0 | 3 |
| (b) Other charges | ... | ... | ... | 3,542 | 4,014 | 4 | 11 |
| Total | ... | ... | ... | <u>£7,213</u> | <u>£7,476</u> | <u>5</u> | <u>2</u> |

III—PLANTS AND SEEDS RECEIVED.

7. I take this opportunity to thank the donors to the Division of Agriculture of plants and seeds. In Appendix A will be found a list of these contributions.

IV—EXTENDED PLANTING OF CACAO IN THE SOUTHERN PROVINCE.

8. During the month of March a scheme was approved for the encouragement of the planting of cacao in the Southern Province by the natives. The Commissioner, Southern Province, and his district commissioners have been indefatigable in their efforts to promote this important work. Two agricultural assistants have been engaged in the province instructing the chiefs and headmen in the making of nurseries and later in the selection and preparation of farms in readiness for planting during the rains of 1924. Over a-quarter of a million plants have been raised at stake in the plantations during the year and many more have been raised in nurseries for planting in 1924. At first, central nurseries were raised at Pujehun and Zimmi and plants were distributed from these to adjoining chiefdoms, but later the majority of the towns and villages had their own nurseries.

9. CACAO PLANTING IN THE PENDEMBU DISTRICT OF THE CENTRAL PROVINCE.—Early in the year an agricultural assistant toured the Pendembu District and selected sites for cacao farms, nurseries having been prepared in the previous year. There is not much scope for extending this work in the Central Province as the area suited to the growth of cacao is limited.

V—THE ENCOURAGEMENT OF SWAMP RICE CULTIVATION IN THE SOUTHERN PROVINCE.

10. As a result of Mr. A. C. Pillai's survey of the Sherbro tract in 1922, it was decided, on his return to India at the end of the year, to utilize the services of his subordinate native officers to instruct the Sherbro natives to plant swamp rice. One hundred and sixty bushels of seed rice were purchased in the Scarries area and distributed free amongst chiefs who possessed swamp lands in their chiefdoms. Expert rice planters were also brought from the Scarries rivers and under the guidance of Rice Instructors J. S. Borbor, Vandi Pakra and Kanray Foulah nurseries were raised and swamp farms cleared in the following chiefdoms:—Imperri, Jong, Bagru, Kpaka, Gbemima, Nongoba Bullom and Bendu. The natives are being encouraged to open up and develop the waste lands of the tidal areas. Already a great advance has been made. The results in the first year have been extremely satisfactory and the bulk of the crop raised was very good.

11. The services of two of the rice instructors, Vandi Pakra and Kanray Foulah, were terminated on 31st October. At the close of the period under review, the instructors at work were Apprentice J. S. Borbor, E. A. O. Davies and Braima, with one other experienced Temne planter.

VI—THE ENCOURAGEMENT OF COCO-NUT GROWING ALONG THE LITTORAL OF THE SOUTHERN PROVINCE.

12. During the early part of the rainy season a large number of ripe seed coco-nuts were collected by the people of Nongoba Bullom, Messi Krim and Pukumu Krim, from the trees in their towns and villages. Agricultural Assistant A. Camara was then sent through that part of the country. He travelled from chiefdom to chiefdom, selected the best seed nuts and planted these in properly prepared communal nurseries. He also selected sites for plantations at various towns. Something like 8,000 to 9,000 nuts have already been planted in the nurseries and next season it is hoped to plant about 25,000 nuts in these chiefdoms and in Shenge.

VII—INTRODUCTION AND DISTRIBUTION OF IMPROVED TYPES OF SEED.

13. **MAIZE.**—A small trial consignment of good export types of seed maize was imported from South Africa. Two bags of each of the following varieties were obtained:—Hickory King, Natal Eight Rows, Potchefstroom Pearl, Wisconsin White Dent and Bayliss Corn Flake. This was distributed throughout the Colony and Protectorate in small lots, for the season planting about the month of September. It is hoped to encourage the natives to produce suitable export types of maize, since the crop flourishes in certain parts of the country.

The results of this first trial are not yet fully known, but reports from certain districts indicate that the crop was grown successfully. Some excellent samples of each variety were exhibited at the agricultural shows.

14. **COTTON.**—Considerable progress has been made during the year in the effort to produce cotton of export quality. Some 5 cwts. of Allen Long Staple cotton seed was obtained from the Government of Nigeria and distributed to chiefs and others in the Protectorate. In most cases the seed was planted too late and the result was almost a complete failure. At Njala and elsewhere certain plants thrived exceedingly well and yielded cotton of good quality. It is almost certain that this variety can be grown here and it is thought that the most suitable localities for it are in the drier areas of Konno and Koinadugu where the granitic soils afford better drainage. The native "Quande" variety is grown fairly extensively there and it thrives well. A further consignment of 5 tons of Allen cotton seed is now on order and the bulk of this will be distributed in the north-eastern part of the Protectorate.

Two district agricultural assistants have already been sent through this part to instruct the people as to how to lay out plantations, and later they will help the people to plant and to care for the crop.

At the same time, instruction is being given in the methods of selection of seed of the native variety, "Quande." By this means it is hoped to improve the quality of the indigenous variety.

15. **GROUND-NUTS.**—A consignment of ground-nuts was imported from the Gambia. The seed was distributed throughout the Protectorate for late season planting. Very few reports on the results of the trial have yet come in. In some districts the crop appears to be doing well, but from other parts chiefs have reported that the heavy rains at planting time were too much for the seed, which rotted and so failed.

16. **DISTRIBUTION FROM NJALA NURSERIES.**—As in past years a large variety of plants was raised and applicants were supplied with stock from these nurseries. A list of plants and seeds distributed will be found in Appendix A.

VIII—GENERAL AGRICULTURE AND NATIVE CROPS.

17. **UPLAND RICE.**—The early rains in March and April interfered with the clean burning of upland farms. At one period the outlook for the rice crop was bad, but fortunately a fairly dry spell in May permitted the proper cleaning of the farms. This threw the crop late and on the whole the amount grown was a little below the average. The yield all over, however, was good so no great shortage is looked for before the harvest of the 1924 crop.

The price of upland rice ranged between 7s. and 18s. per bushel in Freetown.

18. **SWAMP RICE.**—The crop is expected to be up to the average. It is particularly good in the Northern Province. In the Southern Province, where the cultivation of the crop has made such a rapid advance during the year, some damage was done in places by flooding.

19. **GROUND-NUTS.**—The early season crop was up to the average. Ground-nut fungus disease appeared in certain localities. The late season crop, which has been tried for the first time, with seed imported from the Gambia, has not yet been harvested. The local market price was 5s. to 8s. per bushel.

20. **CASSAVA.**—More than the usual amount was grown on account of the fears entertained of a rice shortage.

21. **GINGER.**—This crop is grown principally in the Moyamba District. It is not yet harvested, but it promises to be the best crop for some years past.

22. PEPPERS (chillies).—A good crop. Grown principally in the Central Province, but the cultivation of the crop has increased in the Southern Province, principally in the Gbangbama District. Last season's fine price of 18s. to 25s. per bushel has not been maintained. The crop just harvested was disposed of for 6s. to 7s. 6d. per bushel.

23. MAIZE.—Five South African export types were grown in small quantities throughout the country. The native varieties grown as garden crops were up to the usual standard.

24. COTTON.—The native cotton crop was below the average. This is generally attributed to the late planting of the upland rice farms.

25. COFFEE.—Is grown largely in the Mano River District where it is spreading northwards, following upon an increased trade demand. It is grown on a small scale at various places throughout the Protectorate. The crop which is now coming to harvest is an exceptionally good one.

26. CACAO.—Grown chiefly in the Southern Province where the cultivation of the crop has been very extensively increased during the year. The price offered to growers in the Southern Province has improved considerably in the last two years. The early season crop made 3½d. per lb.

27. KOLA.—The crop was a fair one throughout the country. Prices were as low as £2 10s. per measure in March, whilst the highest price touched by them was £7 10s. in October.

28. GUINEA-CORN AND LESSER MILLETS.—I believe the growing of these crops is on the increase. Guinea-corn is sown largely as a mixed crop.

29. OIL-PALM PRODUCTS.—The price of kernels has improved. The Freetown market fluctuated between £11 and £17 10s. The export of kernels during the year is a record one. From the ports of Freetown and Sherbro the amount exported up to 31st December was 59,545 tons.

The export of palm oil has also been good viz.:—3,346 tons to 31st December. The price has been discouraging, the local market fluctuating between £18 10s. and £26 15s. per ton.

The quality of kernels exported continues to improve under the inspection of produce.

30. PIASSAVA.—The piassava trade is still very dull. The preparation of the product is bad and there is little demand for it on the home market.

IX—TOURS OF INSPECTION.

31. The Director of Agriculture toured the western portion of the Northern Province during the month of January for the purpose of an agricultural survey of that region. He was away from his headquarters at Njala from 3rd May until 3rd September in charge of the headquarters office, while the Commissioner of Lands and Forests was on tour in the Protectorate.

The Agricultural Assistant, Mr. J. W. D. Fisher, was in Freetown and in the Colony in charge of the coco-nut scale pest control measures from 1st January until 10th April when he returned to Njala. He proceeded on a tour of inspection to Batkanu experimental station on 16th April to arrange the crop trials for the season. He returned to Njala on 4th May to proceed on vacation leave to England on 16th May. On return from leave he was in headquarters office, Freetown, from 29th September until 17th October when he returned to Njala. He proceeded to Bo, Central Province, in connection with the Agricultural Show on 14th December and returned to Njala on 22nd December. He proceeded to Sembahun, Southern Province, on 31st December in connection with the Southern Province Agricultural Show, held early in January, 1924.

The Superintendent of the Experimental Station, Njala, Mr. S. L. Moseley, proceeded on a tour to Sembahun in connection with the Southern Province Agricultural Show on 31st December.

Native Agricultural Assistant C. B. Sandy inspected the cacao nurseries and plantations and selected sites for farms in the Pendembu District during the months of March and April. Since then he has toured in the western half of the Southern Province, with his headquarters at Gbangbama, in connection with the scheme for the extension of cocoa cultivation in that area.

Native Agricultural Assistant G. Meama has been stationed at the cocoa experimental station, Zimmi, throughout the year. He has from there toured the whole of the eastern half of the Southern Province on cocoa extension work.

Native Agricultural Assistant A. Camara has continued in charge of the Yongro experimental coco-nut station, Bullom, and has also toured the Bullom shore on scale pest control. From June until October he was withdrawn to the Southern Province to take charge of the coco-nut extension work in the coast region.

Native Agricultural Assistant S. W. During proceeded to Bo Agricultural Show on 17th December. On the 22nd he commenced a tour in the railway zone from Bo to Pendembu, thence to Konno, etc., in connection with cotton propaganda work.

Native Agricultural Assistant E. Musa has throughout the year been stationed in Freetown and has toured the Colony in connection with scale pest measures.

Native Agricultural Assistant C. A. Tucker proceeded on 8th December to Port Lokko and Bo Agricultural Shows and returned to Njala on 21st December.

Native Agricultural Assistant J. M. Coker attended Bo Agricultural Show. He was on tour from the 12th to 31st December.

Rice Instructor J. S. Borbor has been engaged on instructional work in connection with the encouragement of swamp rice cultivation in the Southern Province.

Rice Instructors M. V. Pakra and K. Foulah were engaged in the swamp areas of the Southern Province until 31st October, when their services were terminated.

X—SUB-STATIONS.

32. YONGRO EXPERIMENTAL COCO-NUT STATION.—Agricultural Assistant A. Camara has been in charge of this station. The young coco-nut plantation was badly attacked by the coco-nut scale pest and suffered badly, owing to the heavy and constant pruning which the trees received. The trees were eventually cleaned of the pest. Trials were made with ground-nuts and the South African varieties of maize. The ground-nut trial had as an object, testing the utility of layering by stamping on the plants with the feet, in the native fashion. Unfortunately, the plots were very badly attacked by ground-nut fungus and the results were inconclusive.

The maize yields were low on account of the poverty of the soil in that area and the lateness of planting.

Preparations were made towards the close of the year for the closing down of the station and the handing over of the coco-nut plantation to Paramount Chief Bai Sherbro.

33. BATKANU EXPERIMENTAL FARM.—This station has been under the charge of Agricultural Assistant W. D. Sanu throughout the year. Towards the end of April Mr. J. W. D. Fisher visited the station and selected a site for a second plot on the lateritic soil adjoining the district headquarters. The object of this was to grow such crops as sisal, Mauritius hemp and coffee, where they could not be successfully grown on the low-lying clayey soil in the grassland.

On the low-lying farm the following annual crops were grown:—maize, cotton, benniseed, fundi, ginger, rice, yams and cassava, whilst the crops on the lateritic plot comprised coffee, sisal, hemp, ground-nuts and maize. The coffee and sisal have both grown well on this plot. The ground-nuts were planted in the late season and were affected by the heavy rains. The crops have not yet all been harvested.

34. ZIMMI EXPERIMENTAL CACAO STATION.—This station which has been in existence since October, 1922, has throughout this year been under the charge of Agricultural Assistant G. Meama. An area was planted to cacao and from the nurseries seedlings were distributed throughout the Mano River District. Fermenting boxes have been set up and Agricultural Assistant Meama has given demonstrations in the proper fermentation of beans to natives passing through Zimmi. Court messengers from each district have also received instruction. Agricultural Assistant Meama has been out of his station very frequently while engaged in touring the eastern half of the province making nurseries, selecting and advising on the laying out of plantations and the care of existing plantations and giving fermentation demonstrations in all the villages.

Towards the end of the year arrangements were made for laying down small demonstration plots of coffee at Zimmi. Coffee is fairly extensively and successfully grown in the Mano River District.

XI—PUBLICATION OF PAMPHLETS.

35. During the year the following publications have been issued in pamphlet form:—

Pamphlet No. 5.—“Further Report on Irrigation for and Cultivation of Rice in Sierra Leone.”

Pamphlet No. 6.—“Instructions for Selection of Sites for Cacao Plantations in the Southern Province.”

Pamphlet No. 7.—“The Cultivation of Coco-nuts in Sierra Leone.”

Pamphlet No. 8.—“An A.B.C. on Cotton Cultivation in Sierra Leone.”

Pamphlet No. 9.—“Some Hints on Maize Cultivation.”

Pamphlet No. 10.—“Cultivation of Swamp Rice in Sierra Leone.”

Pamphlet No. 11.—“Hints on the Cultivation and Preparation of Coffee in Sierra Leone.”

In addition the following pamphlets have been revised and brought up to date:—

Pamphlet No. 1.—“The Prospects and the Cultivation of the Lime in Sierra Leone.”

Pamphlet No. 2.—“Some Hints and Notes on Vegetable Gardening in Sierra Leone,” with a note on the preservation of fruit and vegetables.

A considerable amount of information and instructions regarding the cultivation and preparation of crops has also been given to those who have sought advice.

XII—BRITISH EMPIRE EXHIBITION.

36. A large number of crops have been grown at Njala from which suitable exhibits of produce for the British Empire Exhibition have been obtained. These included rice, (swamp and upland), maize, cotton (“Quande” variety) coffee (*Coffee Stenophylla*, *Coffee robusta* and *Coffee Liberica*), ginger, chillies, kola, guinea-corn, arrowroot, tumeric and yams.

In addition to this, certain good samples of produce were purchased at the provincial agricultural shows.

The District Commissioners of Port Lokko, Moyamba and Mano River Districts have rendered me valuable assistance by procuring exhibits of agricultural products from their districts.

Exhibits of husked upland rices, varieties of coffee, starch from arrowroot, ginger, etc., have been prepared at Njala.

XIII—AGRICULTURAL SHOWS.

37. Provincial agricultural shows were held at Port Lokko, Northern Province on the 14th, and at Bo, Central Province, on the 18th, December. Both were opened by His Excellency the Governor, Sir Alexander Ransford Slater, K.C.M.G., C.B.E., and were attended in each case by a number of Government officers, members of the mercantile community and large numbers of the general public.

It was gratifying to find the large number of paramount chiefs and their people who attended, many of them having come from long distances to reach the show centres.

The shows were highly successful and demonstrated a very marked improvement, from the point of view of numbers of exhibits and the quality of these, on any shows which have been held in this country in the past.

XIV—THE EXPERIMENTAL FARM, NJALA.

38. His Excellency the Acting Governor, Mr. J. T. Furley, C.M.G., visited the station from 5th to 6th June, when a complete inspection of the farm was made. Other visitors included Colonel Haywood, Inspector-General, West African Frontier Force, and staff, the Provincial Commissioner, Central Province, and eight district commissioners. A number of paramount chiefs and local farmers were also shown over the farm.

39. The usual varieties of crops have been grown, experimental work carried out and the data recorded. The area under cultivation was increased by about thirty acres and was planted to rice and South African varieties of maize, principally. Fourteen varieties of upland rice were grown. Part of the area thus cleared was laid down to Efwatakala grass and it is proposed to lay down the whole of the thirty acres to a pasture of this grass.

40. The permanent plantations were extended by the planting of the following varieties of coffee:—

| | | | | | |
|---------------------------------|-----|-----|-----|-----|-----------|
| <i>Coffea Canephora</i> ... | ... | ... | ... | ... | } 6 acres |
| <i>Coffea Liberica</i> (small) | ... | ... | ... | ... | |
| <i>Coffea Liberica</i> (medium) | ... | ... | ... | ... | |
| <i>Coffea robusta</i> —Java | ... | ... | ... | ... | |

41. The swamp at Njala has been utilized in the past season for variety trials with swamp rice obtained from the Scarcies rivers. The bulk of these were unharvested at the close of the year. Experiments were carried out to determine the methods of planting which would produce the maximum tillering of plants. A common native belief is that by planting three plants to a hole the best tillering is obtained, but it was found that equally good results were obtained when only one plant was put to each hole, and in the case of one of the plots the results were distinctly in favour of the one plant method.

42. The yields from the annual crop plots were low on the whole. This was mainly due to the lateness of planting consequent upon the breakdown of the motor tractor. The ground-nut crop was heavily attacked by ground-nut fungus. The Nigerian Allen cotton failed, owing to being planted late during the heavy rains. The seed arrived very late from Nigeria.

43. The stock in the nurseries has been kept up to the usual standard. A large number of seeds and plants were received, the bulk of them coming from the Commissioner of Lands and Forests who collected many whilst on tour in the Protectorate.

44. Pita (*Bromelia Magdalenæ*). This important fibre-producing plant, which was introduced in 1921 through the Director of the Royal Botanic Gardens, Kew, and again by the Commissioner of Lands and Forests in 1922, continues to thrive fairly well. Several plants were removed from the nursery and planted in a favourable site on the north bank of the Taia River. All the plants have now produced offsets.

45. Efwatakala grass (*Melinis minutiflora*). There is now about two acres of this grass at Njala. It flowered luxuriantly in October and November and has spread rapidly. Trials are being made to test its power of killing out "lalang" grass.

46. PERMANENT PLANTATIONS—LIME.—The yield of limes has been high, particularly in the case of the Niawama plot. The following figures represent the yield per acre from the two plots:—

| | | | | | | |
|---------|-----|-----|-----|-----|-----|-------------|
| Ngiahun | ... | ... | ... | ... | ... | 223 barrels |
| Niawama | ... | ... | ... | ... | ... | 420 „ |

47. COFFEE.—A very fine crop has been produced this year and in particular that of the Sierra Leone coffee (*Coffea Stenophylla*). The harvest is now on. The entire crop is being reserved for distribution throughout the country for seed purposes.

48. KOLA.—Although the plantation which is bearing is still young—nine years old—a very fair crop has been secured.

49. The Nigerian oil-palm plot has put on very good growth during the year and the majority of the trees are now fruiting (*vide* Appendix A). A start is about to be made to obtain the oil from the fruit of this plot. The oil-palm depericarping machine will be used for the purpose. Five varieties of Sierra Leone oil-palms, which have been raised in the nurseries, will be ready for planting out in plots during the coming rains.

50. SISAL.—The majority of the plants have been allowed to "pole" during the year, in order to produce a large quantity of bulbils for distribution.

51. SISAL HEMP MACHINE.—This has been in work regularly and rope and twine was made for use on the farm and for the packing of plants, produce, etc. A similar machine was made by the Public Works Department for the Batkanu station. Both machines were used for demonstration work at the agricultural shows.

52. I attach, as Appendix A—a detail report on the Experimental Farm, Njala, by the Superintendent, Mr. S. L. Moseley: Appendix B—meteorological data for 1923, and Appendix C—rainfall statements for the ten years ending 1923.

I have the honour to be,

SIR,

Your obedient servant,

J. W. D. FISHER,

Acting Director of Agriculture.

LANDS AND FORESTS DEPARTMENT,
DIVISION OF AGRICULTURE,
NJALA, MOYAMBA DISTRICT,
28th January, 1924.

Appendix A.

REPORT ON THE NJALA EXPERIMENTAL FARM.

FROM THE SUPERINTENDENT OF NJALA EXPERIMENTAL FARM
TO THE DIRECTOR OF AGRICULTURE.

SIR,

I have the honour to submit a report on the Experimental Farm, Njala, for the year 1923.

WORK IN THE NURSERY AND DISTRIBUTION OF PLANTS.

2. The regular receipt of seeds and plants from different sources and the usual demand for seedlings necessitated the extension of the nursery.

The manuring of the beds with pit-stuff received special attention as well as the hoeing out of lalang in adjacent areas.

Seeds were sown in boxes as well as in beds, and seedlings raised and distributed to applicants in the Colony and the Protectorate.

3. Twenty-four different kinds of foreign and forty of local seeds were planted in the nursery, together with 310 plants and cuttings which were obtained locally.

4. There was a total distribution in Sierra Leone of 21,641 plants, eighty-four hampers of Efwatakala grass and five bushels of seeds from the Njala nursery and farm. Plants were also supplied to Kew and the Gambia.

WORK ON THE FARM AND OBSERVATIONS ON PLANTS.

5. During the first quarter of the year an area of five-year old bush, approximately thirty acres, was "brushed" with a view to lay down a pasture of Efwatakala grass, and increase the area under permanent crops. A considerable amount of stumping was also done in the vicinity of the African assistants' quarters at Njala during the making of a convenient road to them.

6. In the month of April, ploughing operations then being carried on, the senior pupils of the Njala school were invited, and a demonstration in ploughing was given for their benefit. Several headmen and others sent to Njala a few weeks previous by the Paramount Chiefs of Taiama and Njama to do the annual house repair work and build new houses were called also, and ploughing and its objects explained to all.

ANNUAL CROP PLOTS.

7. It was desired to carry out with motor power the general preparation work of the annual crop plots, but the wish was not fulfilled owing to excessive delay caused by the tractor being out of order at the time when operations should have been started, and also owing to frequent trouble with this machine during the time of working. In consequence of this delay six acres only of the nine were ploughed, and planting operations on the whole were late. The remaining acres were handforked.

Nearly all of the plots were ridged: the remaining ones were left flat and planted up for comparative purposes.

8. Judging from past experience at Njala, and also from observations on the growths of the crops grown in the period under review, ridging or banking proves conclusively to be the best method in every particular of preparing the land for wet season cultivation (of most annual crops) in dealing with types of soil found in the lowlands of the farm.

The advantages of the ridging system are many, some of which are mentioned here:— (a) it is simple and inexpensive, all things considered; (b) it prevents excessive soil washing; (c) it facilitates drainage and promotes free circulation of air in the soil; (d) it affords convenient disposal of weeds without interfering adversely with the growing crop—the weeds being placed in the furrows; (e) it guarantees a constant supply of vegetable

matter in the soil; (f) it can be adopted, in season, for most annual agricultural crops and is specially suited to ground-nut cultivation, as it facilitates the harvesting of this crop; (g) seed may be sown on the tops of the ridges or banks, as is the case with ground-nut, or, as in the case of cotton, or maize, on the sides or near the top of the ridges in order to make 'moulding' easy.

The height or size of the ridges depends upon the amount of material (manure) to be covered in forming them, and the distance they are to be apart—and this distance is regulated by the kind of crop to be grown. This variation and also weather conditions cause fluctuations in the cost of ridging, which ranges from 15s. to £1 per acre, including the ranging of the material to be covered.

9. Manuring with pit stuff was prominent in the preparation of the plots, the rate of application varying from twenty-seven tons to forty-two tons per acre.

10. The following is the list of the crops grown:—

| | |
|---------------------------------|--|
| Arrowroot | Legumes (Pigeon-pea) |
| Benniseed | Maize—(Lagos white) |
| Cassava | „ Bayliss Corn Flake (South African) |
| Castor oil | „ Hickory King „ „ |
| Cotton—Quande (Mende) | „ Natal Eight Rows „ „ |
| „ Nduli „ | „ Potchefstroom Pearl „ „ |
| „ Fandewai „ | „ Wisconsin White Dent (South African) |
| „ Allens Long Staple (Nigerian) | Millet |
| Guinea-corn | Ochro |
| Ginger | Pepper (chillies) |
| Ground-nut (Bambara) | Rice (upland and swamp) |
| „ (Gambia) | Soya bean |
| Legumes (manurial) | Sweet potatoes |
| „ bean (Bengal) | Tumeric |
| „ „ (Hondroi) | Yams (ordinary—local) |
| „ „ (Sword) | „ „ —Nigerian) |
| „ Indigo | „ „ —Chinese) |

11. Several of the crops were not quite ready for harvesting at the end of the year, but tests were made where practicable, and estimates of their yields with the following observations have been recorded.

12. **ARROWROOT.**—Not ready for harvesting. The plots of arrowroot, one-sixteenth acre each, were planted for the purpose of preparing specimens of starch. One plot was manured with pit stuff at the rate of thirty-two tons per acre and ridged 3 feet apart; the other was left flat. Sets of the rhizome were planted on 25th May, 3 feet by 1 foot in each case. The ridged plot is better of the two. The result of a test is as follows:—from ridges 3 tons 15 cwt. rhizomes per acre; flat, 5 cwt. 45 lb. per acre.

13. **BENNISEED.**—Harvested. Planting distance trials with benniseed were carried out on three small plots. The planting distances were 3 feet by 3 feet; 3 feet by 2 feet; 2 feet by 2 feet. The seeds were sown in nursery beds and the seedlings were also transplanted from a plot on which the seeds were sown with rice. The seedlings stood transplanting fairly well, but the growth generally speaking was unsatisfactory and the yield poor. The total area planted was twenty-eight acres and the best growth was on the plot planted 3 feet by 2 feet. The plots were manured at the rate of twenty-seven tons per acre, but further trials are considered desirable.

14. **CASSAVA.**—Not harvested. An experiment with cassava was started with a view to ascertain what the advantages are, if any, in planting whole stems of the plant instead of pieces twelve to eighteen inches long in the ordinary way, by comparing yields and time of maturity.

An area, half acre, was divided into four plots of one-eighth acre each and then manured with partially decayed pit stuff at the rate of forty-two tons per acre. Two of the plots were ridged and the other two left flat.

Two kinds of ordinary local cassava are being tried—the black stem and the red stem. Whole stems, and also cuttings twelve inches long of each kind were planted on ridges as well as on the flat, and there are eight plots in all.

The cuttings, and whole sticks were planted 3 feet by 2 feet in each case and at a depth of about four inches in the ground. The whole sticks were staked and tied to keep them in position.

A test made two and-a-half months after planting, by measuring the longest root, and obtaining the average girth of roots of three "holes" or plants on each plot, gave results in favour of the long stems in three instances of the four and a detailed report was submitted to the Director of Agriculture on the progress of the experiment.

It was considered desirable to carry out periodic tests in order to ascertain the correct time of harvesting, and the results of three tests have been forwarded at the end of the period being reviewed.

The experiment is not complete, but so far there does not appear to be any distinct line of demarcation between the ripening periods of these two kinds of cassava, judging from the appearance of the roots externally and internally, and also from the taste of them. None were ripe on the 25th of December, the date on which the last test for the year was made. The results of that test are as follows:—

BANK.

| Plot. | Variety. | | | Area of Plot (Sq. yds.) | Weight of Roots from Three Plants. | Estimated Yield per Acre. | | |
|-------|---------------|-----|-----|-------------------------|------------------------------------|---------------------------|------|-----|
| | | | | | | Tons | Cwt. | Lb. |
| A I | Black (long) | ... | ... | 396 | 6 lb. | 4 | 6 | 48 |
| A II | Black (short) | ... | ... | 396 | 8 " | 5 | 15 | 26 |
| B I | Red (long) | ... | ... | 198 | 8 " | 5 | 15 | 26 |
| B II | Red (short) | ... | ... | 198 | 5 $\frac{3}{4}$ " | 4 | 2 | 92 |

FLAT.

| | | | | | | | | |
|------|---------------|-----|-----|-----|---------------------|---|----|----|
| C I | Black (long) | ... | ... | 396 | 3 $\frac{3}{4}$ lb. | 2 | 14 | 2 |
| C II | Black (short) | ... | ... | 396 | 3 $\frac{7}{8}$ " | 2 | 15 | 91 |
| D I | Red (long) | ... | ... | 198 | 6 $\frac{1}{4}$ " | 4 | 10 | 3 |
| D II | Red (short) | ... | ... | 198 | 8 $\frac{7}{8}$ " | 6 | 7 | 94 |

15. **CASTOR OIL.**—Harvested. Two small packets of castor oil seeds were received from Messrs. R. S. Cope Brothers, Paris, through the Commissioner of Lands and Forests, and small trial plots started. The seeds were sown at 'stake' (four to each stake) on two plots on the 30th April at distances of 5 feet by 5 feet on one and 6 feet by 6 feet on the other. The germination was fair. The seedlings were thinned to leave one to each hole and the healthiest of those removed were transplanted to vacant holes. The plants made fair growth and produced seed, which has been collected for propagation purposes.

Small plots of the local castor oil were grown on plots adjoining those which grew the imported seed, and a quantity of seed was also harvested for the extension work and comparative trials.

Pigeon-pea was broadcasted on the castor seed plots to assist in checking soil wash during the rains.

16. **COTTONS.**—Quande (Mende) harvested. A small sample of seed of the native cotton Quande was received through the Commissioner of Lands and Forests. The seed was not a well selected lot, as several plants of Fandewai, another native cotton, appeared on the plot sown. These weeds were removed.

The seed was sown on the 26th of April on manured ridges 4 feet apart and in holes 2 feet apart near the tops of the ridges. The area of the lot sown was one-eighth acre.

The germination of the seed was good and the plants grew well and maintained a healthy appearance throughout. Flowers appeared in the month of June, and when the plants averaged a height of 2 $\frac{1}{2}$ feet.

The bolls were of medium size to small, fairly plump, and with few exceptions four-locked.

Harvesting started during the latter part of October and was of short duration. The total quantity of seed cotton gathered is 19 lb. and it is free of stained cotton; this gives a calculated yield of 152 lb. seed cotton per acre.

The amount of rain that fell on the crop from time of sowing to beginning of harvest is 87.10 inches.

Two other kinds of native cotton, viz., Fandewai and N'duli (Mende) were grown under condition similar to those of Quande with very poor results. The seed was obtained from the Taiama, and the N'jama chiefdoms in the Moyamba District of the Central Province and sown in the month of May. The germination was good and regular, but the seedlings died down here and there, the plots became 'patchy,' and the growth generally was very poor. There was gradual improvement as the rains abated and a small quantity of seed cotton was gathered—Fandewai, $\frac{1}{2}$ lb.; N'duli, $\frac{3}{4}$ lb. At the end of December the plants were in flower, and there was no more cotton to gather.

17. ALLEN LONG STAPLE COTTON.—Seeds of Allen Long Staple cotton imported from Nigeria by the Commissioner of Lands and Forests was sown at Njala in the months of May and June.

The portion of Allen Long Staple cotton seed sown in the month of May was sown on ridges 4 feet apart on one of the annual crop plots and occupied an area of half acre; the other portion sown in the month of June was sown in rows 4 feet apart on the flat on land that was cleared of five-year old bush during the year, and occupied an area of three-eighths acre. The seeds were sown in holes 2 feet apart in each case.

The germination was good throughout, but the growth of the plants in both instances was poor. Fifty per cent. of the plants on the annual crop plot died down after a couple of months poor growth, and the surviving ones remained dwarfed. Floral bracts appeared during the month of July.

The plants though small were healthy. Some good specimens grew on the land cleared of five-year old bush. The bolls are larger than those of Quande—plump, well-developed and four-locked.

There was marked improvement in the appearance of the plants in general since September and, with the advent of more sunny days, a little cotton was picked from each plot. The total quantity obtained is 8 $\frac{1}{2}$ lb. This is being kept for seed in further trials.

It was the intention to carry out with the Allen Long Staple trials in ridge planting, distance planting, planting to get correct season, weekly plantings from commencement of rains, but the seed arrived too late to sow to get correct season before the rains by weekly sowings, nor was it found practicable to sow at the falling off of the rains. It is hoped, however, that in due course, with a ready supply of seeds raised locally, encouraging results will accrue from trials carried out as was originally intended.

18. GINGER.—Not harvested. Planted 27th April. "Sets" of ginger were purchased from a neighbouring village and planted to get material on the spot for cleaning in various ways for demonstration and probably for exhibition purposes.

Two plots of one-eighth acre each were manured with partially decayed pit stuff at the rate of thirty-two tons per acre and one of them was ridged 3 feet apart. The "sets" were planted on the tops of the ridges and in the rows 1 foot apart; the planting distance in each case then being 3 feet by 1 foot.

A test made at end of December enabled an estimate to be made of the respective yields as follows:—bank or ridges—4 tons 6 cwt. 48 lb., flat—2 tons 8 cwt. 69 lb., per acre.

19. GROUND-NUT (Bambarra).—Harvested. A plot 462 square yards was manured with pit stuff at the rate of twenty-seven tons per acre ridged 3 feet apart, and sown to Bambarra ground-nut. The seed which was obtained locally from the Northern Province was sown 1 foot apart on the tops of the ridges on the 5th of June. The germination was good and regular and the plants grew well. The plants died down during early December and the crop was harvested. The quantity of nuts obtained was 651 lb., equivalent to twenty-one bushels per acre.

GROUND-NUT (Ordinary peanut—*Arachis hypogaea*).—Further efforts to grow a good crop of ground-nuts did not meet with the desired success owing, no doubt, to the prevalence of the "ground-nut disease"; seeds were imported from the Gambia and sown on ridges in the month of May. The germination was good and regular and the growth of the

plants good in the early stages, but the pest appeared soon after, with usual harmful effects, and the crop was lost. The total yield from 1·1/8 acres was 74 lb., measuring six bushels, of which over 50 per cent. was mere husk.

A little seed left over from the May sowing was sown on a small area in the laterite gravel soil near Ngiahun on the 9th September. The plants grew fairly well, although the disease appeared here and there. The crop has not been harvested.

20. GUINEA-CORN.—Guinea-corn of different kinds, sown chiefly for the purpose of collecting samples for exhibition, was grown principally amongst the upland rices. This crop has not been harvested.

Small plots of three kinds of guinea-corn sown for collecting data were heavily attacked by birds.

21. LEGUMES.—All not harvested. Seeds of legumes were sown for green manure trials in the month of June and consisted of pigeon-pea, cow pea (blackeye), indigo, Bengal bean, "Hondroi" bean (*Vigna sp.*) and sword bean (*Canavalia ensiformis*). There were two small plots of each kind—one plot of ridges, and the other flat. All of the flat plots failed with the exception of pigeon-pea, and Bengal bean, although Bengal bean did not show satisfactory growth until the falling off of the rains. Most of the surviving plants are to be found on the ridges and from these seeds are being obtained.

The behaviour of Bengal bean confirmed past trials at Njala. The legume, though hardy, like many legumes of the pea and bean tribe grown for green dressings and manurial purposes, does not like the heavy rains, especially during the early stages of its growth, but grows well during the dries. All legumes, however, should be sown some time before the heavy rains set so as to give the seedlings a good start, and avoid damping off.

22. MAIZE (Lagos white).—Two small plots of Lagos white maize were sown during the rains in May and June, for the purpose of maintaining a stock of good selected seed. The quantity of the seed maize obtained from half acre was 140 lb.

On the 9th of October selected maize seed obtained from the rainy season crop was used in sowing an acre. The germination was retarded by heavy rain soon after sowing, but as the weather improved the seedlings appeared in a healthy state. The growth has been satisfactory. The crop was not ready for harvesting and no test was made. A good yield is however expected. The amount of rain that fell on the crop to the end of December was 17·78 inches.

23. MAIZE (South African).—Not harvested. The following five varieties of maize were imported from South Africa:—Hickory King, Potchefstroom Pearl, Wisconsin White Dent, Natal Eight Rows, Bayliss or Palins Corn Flake. The seed was received at Njala on 25th August and each variety sown in the month of September in suitably isolated areas so as to avoid crossing. All germinated well except Potchefstroom Pearl.

The majority of the plants on all of the plots were dwarfed. On the Potchefstroom pearl plot, however, were many vigorous plants, and from the standpoint of height of plants generally, this plot was the best.

The following observations were recorded at the end of October:—

| NAME. | Locality and Soil. | Sown. | Flowered. | REMARKS. |
|---------------------------------|---|----------------------|---------------------|--------------------------------------|
| Bayliss or Palins Corn Flake | Ngiahun—on laterite gravel | 13th Sept., 1923. | 22nd Oct., 1923. | Plot regular; growth very uneven. |
| Hickory King ... | Njala—light loam ... | 13th Sept., 1923. | 26th Oct., 1923. | Plot regular; growth uneven. |
| Natal Eight Rows | Njala—light loam—on portion of land recent- ly cleared of five-year old bush | 13th Sept., 1923. | 26th Oct., 1923. | Plot regular; growth uneven. |
| Wisconsin White ... Dent | Nywhyama—on light dark alluvial | 14th Sept., 1923. | 22nd Oct., 1923. | Plot regular; growth uneven. |
| Potchefstroom Pearl | Ngiahun—on undulating land—laterite growth | 14th Sept., 1923. | 29th Oct., 1923. | Plot irregular; growth uneven. |

The irregularity on the Potchefstroom Pearl plot was due to low percentage of germinated seeds. All of the plots were very nearly ready for harvesting at the end of the year.

Like all new importations it must take some time for the plants to do their best if they survive the new conditions: therefore it is too early to say which of these varieties will thrive and be a commercial success under Sierra Leone conditions.

24. MILLET.—Not harvested.—Bulrush millet was sown for the purpose of obtaining samples for exhibition.

The seed was obtained from Taiama and Njama chiefdoms in the Moyamba District and sown amongst a few of the upland rices in the month of June.

The germination was good and the growth fair, but the grain has been seriously attacked by birds.

25. OCHRO.—Trial plots of ochro for fibre tests were started and it is to be regretted that poor and irregular growth did not permit the carrying out of the tests.

During the latter part of 1922 a parcel of seed was received from Nigeria and sent to Njala for sowing for the purpose of extracting fibre from the plants and carrying out comparative tests with a local ochro. Owing to the difficulty of obtaining local seed sowing was not started until late in the following season.

The bulk of the Nigerian seed failed to germinate, but on receipt of the parcel in 1922 a few seeds were sown in the nursery. These did well and developed good plants; from these plants seeds were collected, small plots started, and a further supply of seed obtained.

The Nigerian seed produced two distinct types of plants—one with a tall whitish green stem of few branches and bearing long pods; the other with a reddish brown stem, branching freely and carrying short thick pods.

There is now on hand also a useful quantity of local seed.

26. PEPPER.—Seedlings raised from a small quantity of pepper seed obtained in the neighbourhood were planted on a small plot at various distances apart for the purpose of collecting crop data. The result was disappointing: the plants grew moderately well and bore fruit of sizes varying from the small chillies to the large "bonnet" (*Capsicum annuum*?) As chillies were required throughout, seeds of these were collected for further trials.

27. RICE (upland and swamp).—Not all harvested. The produce of plots harvested not threshed and winnowed at end of December but stored in sheaves.

Sample plots of fifteen kinds of Sierra Leone upland rice were grown principally for collecting specimens for the British Empire Exhibition, and sixteen kinds of swamp rice sown partly for the purpose of obtaining specimens of rice in ear for the British Empire Exhibition, but primarily for general observations on their behaviour when grown under inland swamp conditions, and to compare the results of growing one seedling to stand against three seedlings to stand. The natives usually plant three or four seedlings to a hole on their swamp farms.

The upland rices were obtained from the neighbouring chiefdoms of Taiama and Njama in the Moyamba District of the Central Province, and the swamp rice from the Scarcies rivers in the Northern Province.

UPLAND RICE.—An area of five-year old bush was cleared for an Efwatakala grass pasture, and as the whole area could not be planted during the year it was decided to grow the upland rices there.

The kinds grown were Jobboi, Dooliwai, Filiwai, Yakai, Tupubai, Gbongoi, Gottoi, Bogatee, Kpakie, Geema Gobai, Genduville Kpakaiwa, Malakai M'bowa and G'bondobai—all from the Mende tribe.

The plots were sown in the months of May and June. The germination was good and the growth on the whole fairly satisfactory. All of the plots have been harvested except Yakai, which proved to be a swamp rice, judged from its growth which was rather slow and stunted.

SWAMP RICE.—The swamp rices grown were sixteen kinds, with Temne names, viz.:—Pa Coba Pifeira, Pa Lal, Pa Poto, Pa Coba, Pa Ronkoh, Pa Bolo, Pa Kali Modu, Pa Lokko, Pa Bensali, Pa Biss, Pa Sali, Pa Yindian, Pa Yaka, Pa Litoma, Pa Potocase.

A small area was cleared in the month of May to form a nursery near an inland swamp to which the seedlings were to be transplanted, and the seed sown. The seedlings were transplanted in July.

The germination was good throughout. Two small plots of each kind were planted with one seedling to stand on one plot against three seedlings to stand on the other. The growth has been generally healthy and the tillering good. The single seedlings tillered so well that at the time of flowering the difference in planting was not at all perceptible—the one to stand holes were as full as the three to stand in the majority of cases and distinctly better on plots No. 7 Pa Bolo, No. 8 Pa Kali Modu, No. 9 Pa Lokko. At the end of December two kinds were harvested and others were ripening. Special reports have been submitted from time to time during the period of growth on both the upland and the swamp rices.

28. SOYA BEAN.—A parcel of Soya bean seeds was obtained from Messrs. R. S. Cope, Paris. Weekly periodic sowings were started on the 16th April to observe the best germinating period before and after the rains.

The germinating period for the first four sowings, i.e. to the middle of May was four days. From July throughout the rains to December four days. The seeds were sown, twenty at a time, weekly, in a manured bed in the nursery.

29. SWEET POTATOES.—Two plots of sweet potatoes were planted on manured ridges 3 feet apart with the cuttings 1 foot apart on the tops of the ridges. The portion of the stem or vine used was the “second” cut, i.e. the cutting made after removing eight to nine inches from the tips. The cuttings were 1 foot in length, and on one plot two cuttings were planted to a hole against one cutting to a hole on the other plot.

The plots were planted on the 31st of May and harvested on the 12th of November. The yields were as follows:—

| Plot. | | | | | Number of Cuttings to Stand. | Calculated Yield Per Acre. | | |
|-------|-----|-----|-----|-----|---------------------------------|-------------------------------|------|-----|
| | | | | | | Tons | Cwt. | Lb. |
| A | ... | ... | ... | ... | 1 | 1 | 7 | 63 |
| B | ... | ... | ... | ... | 2 | 1 | 2 | 91 |

Only one kind of sweet potato was grown. There are two kinds obtainable at Njala and they are not cultivated. Trials have been made with both and it was found that the one experimented with this year is the better of the two. The other, a heavy thick-leaved kind, grew luxuriantly, as in the wild state, producing a large amount of vegetation with nothing at the roots. No cuttings or “sets” of different types were obtained to permit the selection of good varieties.

30. TUMERIC.—Not harvested. Two plots of tumeric were planted on manured ridges 3 feet apart and the “sets” planted 1 foot apart on the ridges, as in the case of ginger.

On one plot of an area of 264 square yards were planted “sets” obtained from an old tumeric plot at Ngiahun, Njala, and on the other were planted “sets” sent from Konno country through the Commissioner of Lands and Forests. The area of this plot is thirty-four square yards. A third plot was planted on the flat with the “sets” sent 3 feet by 1 foot. The area is 110 square yards.

Tests made gave the following results:—

| Plot. | Area (Sq. yds). | Origin of Sets. | Date Planted. | How Planted. | Estimated Yield Per Acre. | | |
|-------|-----------------|--------------------------|-----------------|-------------------|---------------------------|------|-----|
| | | | | | Tons | Cwt. | Lb. |
| 1 | 264 | Ngiahun (Njala) | 30th May, 1923 | On ridges 3' x 1' | 2 | 7 | 29 |
| 3 | 110 | " | " | On flat 3' x 1' | 0 | 16 | 23 |
| 2 | 34½ | Konno (Central Province) | 18th June, 1923 | On ridges 3' x 1' | 2 | 14 | 2 |

31. YAMS (ordinary).—A plot (403 square yards) manured at the rate of forty-two tons per acre and cross-banked 3 feet by 3 feet was planted to ordinary white yam. Each "set" was planted in the centre of the square formed by the banks after this had been filled with soil.

Three portions of the yam were used as "sets"—the head, the middle, and the end. The majority of the middles and the ends failed to grow. The crop is not ready for harvesting. A test made indicated a yield of 3 tons 12 cwt. 103 lb. per acre.

An attempt to grow yams by planting the "sets" in furrows met with total failure. The continuous silting of the furrows kept the "sets" at an unnatural depth, and, moreover, during the heavy rains the furrows were frequently filled with water.

NIGERIAN YAMS.—Small lots (5 lb. each) of six varieties of yams were imported from Nigeria and planted on manured ridges. They grew satisfactorily, but were not ready for harvesting. No tests have been made as all are required for propagation purposes.

CHINESE YAMS.—Three plots of Chinese yams were grown principally for the purpose of maintaining a stock of seed for distribution. Every year there is a demand for seed of this yam.

The following table gives the results of tests made on the plots:—

| Plot. | Planting Method. | Estimated Yield Per Acre. | | |
|-------|--|---------------------------|------|-----|
| | | Tons. | Cwt. | Lb. |
| 1 | 3' x 1' on banks manured with the ashes of a burnt rubbish heap at the rate of 28 tons per acre. Plants staked. | 11 | 6 | 98 |
| 2 | Planted and manured as above. Plants unstaked. | 2 | 3 | 4 |
| 3 | Planted as above, but manured with dried lalang grass at 32 tons per acre. | 1 | 17 | 21 |

32. CASSAVA WITH SESSILE LEAVES.—The Commissioner of Lands and Forests sent from Makump during one of his tours in the Protectorate twenty-four cuttings of a variety of cassava found with sessile leaves at Mabonto. They were received and planted on the 30th of June on a bank, and 1 foot apart. Three of them died, but the remaining twenty-one grew well.

A test was made and the weight of the roots obtained from one plant was 4¾ lb. The roots are not quite ripe. None of the labourers here appear to know the plant, and all give it a rather curious eye.

PERMANENT PLANTATIONS.

33. The permanent plantations increased by plantings of coffee and Efwatakala grass.

The varieties of coffee planted were:—*Canephora*, *Liberica* (small) *Liberica* (medium) *robusta* (Java); and the area occupied approximates six acres. The trees that are being used for shade are rubber (*Hevea*) and *Albizia Browniei*.

34. EFWATAKALA GRASS.—A pasture of this grass was started as a forage crop. The area planted is three acres, but the grass is spreading rapidly.

It was observed during planting time that any portion of this grass will grow, but greater success is got by planting the tips or first "cut"—preferably in a slanting position in drills. A trial with Efwatakala grass to observe its influence on the growth of "lalang" was started. A square chain of land thickly covered with "lalang" was divided into two plots. One plot was simply cutlassed, and the other deephoed with a view to weaken the rhizomes of the "lalang." Both plots were planted at the same time to Efwatakala in rows 1 foot by 1 foot apart. The "lalang" on the cutlassed area renewed growth rapidly as usual and was hand-pulled. Both plots have been weeded simultaneously and the Efwatakala is now established. As soon as the cuttings of Efwatakala struck, weeding of the "lalang" ceased. One cannot say as yet whether the experiment will result favourably, but from present appearance of growth, the necessity of hoeing the plot before planting the grass is indicated. The deep-hoed area is very nearly covered whilst the growth on cutlassed area is very thin. It is evident that the quicker the Efwatakala spreads the less room there will be on the surface of the soil for the seed of "lalang" to which the hairiness and stickiness of the leaves of Efwatakala will, no doubt, act as a hindrance.

Trials were made with Efwatakala as to its efficacy in driving away white ants, with negative results. Freshly made ant hills were sought out and attacked with periodic applications of 5 to 6 lb. Efwatakala. The termites defended vigorously and resealed the cavity as often as it was opened and a fresh supply of grass added. On several occasions the leaves of the grass were observed stuck together and partly shredded. It might be found out from observation that no new ant hill appears on or near an Efwatakala grass patch, but to dislodge termites from their tunnels by periodic applications of Efwatakala grass is, from experience, doubtful.

A plot of Efwatakala grass was cut and weighed after eight months' growth and then dried and weighed with the following results:—

| | |
|------------------------------|---------|
| Weight of green grass | 168 lb. |
| Weight of dry grass | 59 ,, |

35. LIMES.—The lime yields continue to increase. The following table shows the quantities collected for the year—January to December.

| Plot. | Soil. | Area of Plot (Acres). | Number of Trees on Plot. | Quantity Fruit Gathered (Barrels). | Average Yield per Tree (Barrels). | Date Planted. |
|----------------|--------------------------|-----------------------|--------------------------|------------------------------------|-----------------------------------|---------------|
| Njala | Sandy loam ... | ·40 | 56 | 18·08 | ·32 | 1913–1914 |
| Ngiahun | Laterite gravel | 1·79 | 346 | 399·04 | 1·15 | 1916 |
| Niawama | Light alluvial, dark ... | 1·30 | 232 | 546·50 | 2·43 | 1913–1914 |

36. KOLA.—On the young kola plantation at Niawama, ninety-one trees fruited and yielded 1,591 pods from which 382 lb. nuts, measuring 6·4 bushels, were obtained.

37. COFFEE.—The young coffee plantation at Niawama (*C. robusta*), and at Njala (*C. Canephora*) have made satisfactory growth.

From the plots in bearing, berries were gathered as follows:—

| Name. | Location. | Number of Trees. | Number of Bearing Trees. | Quantity of Fresh Berries Harvested (Lb.). |
|-------------------------------------|-----------------|------------------|--------------------------|--|
| <i>Coffea robusta</i> | Njala | 263 | 263 | 475 |
| <i>Coffea robusta</i> (Java) | Nywhyama | 30 | 30 | 12 |
| <i>Coffea Liberica</i> | Nywhyama | 129 | 129 | 601 |
| <i>Coffea stenophylla</i> | Ngiahun | 317 | 300 | 73 |
| <i>Coffea Liberica</i> | Njala | 29 | 29 | 14 |

The *C. Liberica* trees were topped during the year.

38. OIL-PALM, NIGERIAN.—The Nigerian oil-palms made satisfactory growth. The plot remained healthy throughout. There were more than four times the number of fruiting trees at the end of the year than there were at the end of 1922.

The condition of the plot at the end of December was as follows:—

| Area—Acre. | Number of Trees. | Number Flowering. | Number Fruiting. | Number of Heads. | Average Number of Heads per Bearing Tree. |
|------------|------------------|-------------------|------------------|------------------|---|
| 4.44 | 336 | 91 | 189 | 1,779 | 9.4 |

Several of the heads have begun to ripen.

39. **FRUIT ARBORETUM.**—The fruit arboretum was maintained in a fairly healthy condition. A stem borer attacked some of the guava and soursop plants. Specimens of this insect were collected and the holes made by it in the stems of the trees treated with tar. Pruning of the stems was done where practicable. The grape-fruit, tangerines and the grafted oranges (imported) bore well.

The American seedling mangoes also bore a good crop of fruit, generally. A few of the fruits were gathered, characterized, and particulars respecting them recorded for reference.

GENERAL.

40. The imported farm seeds received were:—

- 20 lb. cotton (Allen Long Staple) from Nigeria
- 50 lb. each of five varieties of maize from South Africa
- 10 bushels ground-nut from Gambia.

Of the ten bushels ground-nut six bushels were sent to out-stations, Batkanu and Yongro.

41. The Superintendent was at Njala on duty throughout the period. On the 3rd May the Director of Agriculture proceeded to Freetown for duty at head office and the Superintendent with special written instructions was left in entire charge of the station. During the absence of the Director of Agriculture, the Superintendent became responsible for the standing imprest account, made all payments and signed for the Director all vouchers in connection therewith. Certain correspondence having direct relation to the farm and farm produce, such as the distribution of plants from the nursery, was also dealt with. The Director remained at Freetown for four consecutive months, returning for a few days only in June to receive His Excellency the Acting Governor, who visited Njala on the 5th of that month.

In the Director's absence the annual house repair work was done by the Paramount Chief of Taiama by whom were erected one rest-house (for chiefs visiting the farm); one clerk's house, one labourers' house, one potting shed and tool store for the nursery, and one manure shed. Three small houses for African agricultural assistants were built in the meantime by the Paramount Chief of Njama.

WEATHER.

42. The rains started early and the average monthly rainfall for the period March to December was 11.0 inches. The quantity recorded for January and February is .07 inch and is not considered.

The total rainfall to end of period under review was 110.07 and the wettest month was October, for which month 21.37 inches were recorded.

I have the honour to be,

SIR,

Your obedient servant,

S. L. MOSELEY,
Superintendent.

APPENDIX B.

METEOROLOGICAL DATA.

BATKANU.

| Month. | SHADE. | | Total Rain- fall for Month. |
|---------------|-------------------------|-------------------------|--------------------------------------|
| | Maxi- mum, 5 p.m. | Mini- mum, 9 a.m. | |
| January ... | 95·21 | 70·11 | — |
| February ... | 95·82 | 69·04 | ·05 |
| March ... | 97·84 | 70·77 | 1·22 |
| April ... | 93·1 | 71·17 | 6·74 |
| May ... | 95·03 | 70·64 | 6·71 |
| June ... | 93·2 | 71·7 | 18·10 |
| July ... | 92·19 | 66·64 | 22·60 |
| August ... | 92·84 | 67·19 | 22·50 |
| September ... | 93·1 | 66·6 | 17·60 |
| October ... | 93·75 | 67·33 | 15·05 |
| November ... | 93·33 | 69·4 | 9·65 |
| December ... | 93·39 | 66·78 | 1·90 |

Bo.

| MONTH. | SHADE. | | Total Rain- fall for Month. |
|---------------|-------------------------|-------------------------|--------------------------------------|
| | Maxi- mum, 5 p.m. | Mini- mum, 9 a.m. | |
| January ... | 91·61 | 66·06 | 0·19 |
| February ... | 94·0 | 67·61 | 1·28 |
| March ... | 93·26 | 69·65 | 2·05 |
| April ... | 90·17 | 68·97 | 9·67 |
| May ... | 90·68 | 69·16 | 7·48 |
| June ... | 87·87 | 67·30 | 11·39 |
| July ... | 84·06 | 68·13 | 19·66 |
| August ... | 82·32 | 67·29 | 12·37 |
| September ... | 85·93 | 67·36 | 16·82 |
| October ... | 88·61 | 67·58 | 17·34 |
| November ... | 89 | 65·1 | 7·72 |
| December ... | 88·58 | 66·94 | 0·51 |

BONTHE.

| | | | |
|---------------|-------|-------|-------|
| January ... | 88·16 | 70·23 | 0·02 |
| February ... | 90·36 | 70·93 | 0·54 |
| March ... | 90·48 | 73·32 | 2·07 |
| April ... | 88·87 | 73·10 | 4·68 |
| May ... | 87·90 | 73·64 | 6·38 |
| June ... | 85·3 | 73·1 | 27·07 |
| July ... | 82·61 | 71·81 | 23·33 |
| August ... | 81·68 | 71·23 | 15·47 |
| September ... | 84·46 | 72·06 | 22·74 |
| October ... | 86·64 | 72·29 | 17·72 |
| November ... | 88·06 | 72·93 | 8·66 |
| December ... | 90·39 | 72·71 | ·06 |

DARU.

| | | | |
|---------------|-------|-------|-------|
| January ... | 91·30 | 64·50 | — |
| February ... | 95·4 | 66·9 | ·16 |
| March ... | 95·9 | 71·4 | 1·8 |
| April ... | 92·8 | 71·4 | 6·11 |
| May ... | 91·8 | 71·3 | 13·11 |
| June ... | 89·7 | 71·8 | 13·06 |
| July ... | 84·4 | 70·3 | 18·60 |
| August ... | 83·6 | 69·4 | 8·05 |
| September ... | 86·9 | 70·2 | 25·47 |
| October ... | 88·9 | 69·8 | 9·75 |
| November ... | 89·8 | 70·5 | 6·36 |
| December ... | 89·7 | 68·3 | ·76 |

KABALLA.

| MONTH. | SHADE. | | Total Rain- fall for Month. |
|-----------|-------------------------|-------------------------|--------------------------------------|
| | Maxi- mum, 5 p.m. | Mini- mum, 9 a.m. | |
| January | 92·03 | 67·33 | — |
| February | 93·18 | 16·46 | — |
| March | 93·97 | 71·74 | 3·0 |
| April | 93·37 | 71·70 | 4·83 |
| May | 94·55 | 71·42 | 5·44 |
| June | 91·0 | 69·37 | 15·65 |
| July | 88·80 | 68·67 | 14·08 |
| August | 88·09 | 63·38 | 11·90 |
| September | 90·43 | 69·60 | 18·24 |
| October | 90·90 | 70·26 | 12·83 |
| November | 92·23 | 70·60 | 10·91 |
| December | 91·80 | 70·87 | 1·56 |

KISSY.

| MONTH. | SHADE. | | Total Rain- fall for Month. |
|-----------|-------------------------|-------------------------|--------------------------------------|
| | Maxi- mum, 5 p.m. | Mini- mum, 9 a.m. | |
| January | 87·90 | 71·45 | — |
| February | 87·7 | 71·5 | 1·17 |
| March | 88·7 | 73·4 | ·27 |
| April | 88·4 | 73·1 | 6·25 |
| May | 88·1 | 72·6 | 8·55 |
| June | 86·9 | 71·5 | 15·21 |
| July | 82·0 | 70·4 | 31·08 |
| August | 81·9 | 70·9 | 20·74 |
| September | 84·0 | 71·0 | 20·92 |
| October | 86·1 | 70·5 | 17·90 |
| November | 87·3 | 71·7 | 5·0 |
| December | 87·7 | 72·9 | ·28 |

MOYAMBA.

| | | | |
|-----------|-------|-------|-------|
| January | 92·23 | 70·13 | ·08 |
| February | 95·89 | 72·53 | ·61 |
| March | 94·61 | 71·19 | 1·64 |
| April | 92·2 | 67·9 | 2·88 |
| May | 88·3 | 61·3 | 9·58 |
| June | 85·9 | 60·9 | 12·06 |
| July | 81·1 | 61·3 | 16·29 |
| August | 80·9 | 65·1 | 20·11 |
| September | 84·5 | 66·8 | 18·58 |
| October | 89·06 | 69·06 | 15·24 |
| November | 90·5 | 69·9 | 7·99 |
| December | 91·7 | 68·6 | 2·79 |

PUJEHUN.

| | | | |
|-----------|-------|-------|-------|
| January | — | — | ·65 |
| February | — | — | ·30 |
| March | — | — | 3·53 |
| April | — | — | 9·51 |
| May | — | — | 9·76 |
| June | 87·06 | 72·53 | 11·56 |
| July | 81·71 | 70·29 | 38·10 |
| August | 83·32 | 70·77 | 19·70 |
| September | 83·66 | 70·6 | 17·90 |
| October | 86·35 | 70·51 | 13·48 |
| November | 88· | 71·2 | 8·81 |
| December | 89·77 | 70·84 | — |

NJALA.

| MONTH. | SHADE. | | Total Rain- fall for Month. |
|-----------|-------------------------|-------------------------|--------------------------------------|
| | Maxi- mum, 5 p.m. | Mini- mum, 9 a.m. | |
| January | ... 93·12 | 58·90 | ·02 |
| February | ... 92·57 | 67·07 | ·05 |
| March | ... 93·03 | 69·61 | 5·09 |
| April | ... 95·3 | 68·53 | 4·42 |
| May | ... 96·26 | 69·35 | 8·01 |
| June | ... 96· | 68·5 | 12·27 |
| July | ... 85·45 | 68·03 | 17·79 |
| August | ... 79·70 | 66·61 | 13·47 |
| September | ... 85·93 | 67·46 | 20·40 |
| October | ... 88·87 | 66·64 | 21·36 |
| November | ... 90·53 | 64·43 | 5·55 |
| December | ... 91·77 | 65·90 | 1·64 |

RAINFALL, NJALA, 1914-1923.

| Month. | 1914. | 1915. | 1916. | 1917. | 1918. | 1919. | 1920. | 1921. | 1922. | 1923. | Average. |
|-----------|-------|--------|--------|--------|-------|--------|-------|--------|--------|--------|----------|
| January | ·00 | — | — | ·60 | 1·11 | — | — | — | — | ·02 | ·173 |
| February | ·05 | ·49 | ·27 | 2·64 | — | — | ·089 | 2·39 | — | ·05 | ·597 |
| March | ·60 | 7·62 | 1·40 | 1·29 | 9·39 | 3·46 | 3·09 | 2·34 | ·87 | 5·09 | 3·525 |
| April | 4·11 | 5·33 | 2·94 | 2·33 | 7·57 | 7·40 | 3·57 | 6·36 | 4·50 | 4·42 | 4·853 |
| May | 12·50 | 13·85 | 5·67 | 5·01 | 8·71 | 9·94 | 6·65 | 8·15 | 12·71 | 8·01 | 9·120 |
| June | 9·44 | 18·56 | 12·46 | 11·31 | 8·32 | 13·41 | 8·05 | 12·98 | 13·25 | 12·27 | 2·005 |
| July | 6·84 | 20·58 | 21·24 | 12·14 | 11·05 | 12·60 | 21·75 | 10·66 | 16·65 | 17·79 | 15·130 |
| August | 16·68 | 24·67 | 23·29 | 21·17 | 12·00 | 18·53 | 9·60 | 24·20 | 15·87 | 13·47 | 17·948 |
| September | 20·68 | 13·53 | 18·05 | 19·83 | 14·04 | 19·02 | 18·68 | 12·95 | 21·58 | 20·40 | 17·876 |
| October | 14·40 | 10·11 | 13·91 | 15·79 | 10·92 | 9·38 | 13·22 | 13·43 | 14·87 | 21·36 | 13·739 |
| November | 6·08 | 6·44 | 8·82 | 8·46 | 8·89 | 8·34 | 8·62 | 7·42 | 7·92 | 5·55 | 7·654 |
| December | ·35 | ·57 | 2·23 | 1·54 | 2·23 | 1·05 | ·35 | — | 2·09 | 1·64 | 1·205 |
| Total | 91·73 | 121·75 | 110·28 | 102·11 | 94·23 | 103·13 | 94·69 | 100·88 | 110·31 | 110·07 | 103·823 |

RAINFALL, BATKANU, 1914-1923.

| MONTH. | 1914. | 1915. | 1916. | 1917. | 1918. | 1919. | 1920. | 1921. | 1922. | 1923. | Average. |
|-----------|-------|--------|--------|--------|--------|-------|--------|--------|--------|--------|----------|
| January | ·05 | — | — | — | — | — | — | — | — | — | — |
| February | — | ·05 | 1·04 | 2·28 | — | ·25 | — | — | — | ·05 | ·367 |
| March | ·36 | 2·65 | 2·5 | ·74 | 2·95 | 4·00 | ·55 | ·25 | ·02 | 1·22 | 1·524 |
| April | 1·10 | 9·34 | 4·55 | 1·39 | 1·41 | 1·41 | 2·51 | 2·63 | 6·13 | 6·74 | 4·324 |
| May | 2·66 | 11·45 | 6·66 | 8·23 | 12·81 | 12·34 | 5·57 | 12·58 | 12·62 | 6·71 | 9·160 |
| June | 11·02 | 13·13 | 14·85 | 12·32 | 15·78 | 18·87 | 16·42 | 11·90 | 13·95 | 18·10 | 14·634 |
| July | 15·18 | 19·81 | 28·15 | 19·05 | 16·20 | 22·39 | 19·72 | 23·6 | 31·63 | 22·60 | 21·833 |
| August | 13·15 | 17·07 | 39·05 | 30·10 | 9·39 | — | 13·51 | 33·07 | 26·06 | 22·50 | 20·390 |
| September | 16·68 | 20·41 | 20·02 | 22·35 | 13·37 | — | 18·35 | 15·0 | 18·98 | 17·60 | 16·276 |
| October | 22·44 | 15·29 | 15·59 | 17·00 | 15·61 | 12·04 | 14·86 | 19·03 | 17·71 | 15·05 | 16·462 |
| November | 6·12 | 6·40 | 5·18 | 11·00 | 9·93 | 4·42 | 10·69 | 15·93 | 14·97 | 9·65 | 9·429 |
| December | — | — | 3·25 | ·63 | 1·72 | — | — | — | 4·10 | 1·90 | 1·160 |
| Total | 88·76 | 115·60 | 140·84 | 125·09 | 102·20 | 78·72 | 102·18 | 133·99 | 146·17 | 122·12 | 115·559 |

RAINFALL, BO, 1914-1923.

| MONTH. | 1914. | 1915. | 1916. | 1917. | 1918. | 1919. | 1920. | 1921. | 1922. | 1923. | Average. |
|-----------|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|
| January | — | — | — | ·18 | ·60 | — | — | — | ·05 | 0·19 | ·102 |
| February | 2·11 | ·30 | ·77 | 2·20 | — | 1·02 | — | 1·22 | — | 1·28 | ·89 |
| March | ·179 | 4·23 | 5·47 | 2·90 | 2·78 | 2·49 | 4·84 | 1·90 | ·28 | 2·05 | 2·267 |
| April | 8·20 | 7·92 | 3·86 | 2·66 | 12·00 | 5·47 | 6·00 | 9·15 | 7·29 | 9·67 | 7·222 |
| May | 9·10 | 15·40 | 9·27 | 6·20 | 9·83 | 8·85 | 14·11 | 7·39 | 12·92 | 7·48 | 10·055 |
| June | 28·13 | — | 8·40 | 12·44 | 6·82 | 17·43 | 15·90 | 20·70 | 13·88 | 11·39 | 13·509 |
| July | 8·16 | — | 27·04 | 14·94 | 10·81 | 16·72 | 23·86 | 16·63 | 9·13 | 19·66 | 14·695 |
| August | 13·49 | 29·36 | 21·65 | 17·84 | 14·77 | 25·19 | 22·97 | 27·02 | 16·16 | 12·37 | 20·088 |
| September | 18·34 | 23·08 | 24·76 | 20·19 | 25·86 | 37·38 | 35·01 | 16·77 | 25·81 | 16·82 | 24·397 |
| October | 11·63 | 13·30 | 17·80 | 12·80 | 16·80 | 16·88 | 13·84 | 13·85 | 17·86 | 17·34 | 15·21 |
| November | 3·65 | 7·11 | 5·45 | 9·78 | 3·99 | — | 12·02 | 7·35 | 9·38 | 7·72 | 6·645 |
| December | ·112 | ·41 | 4·28 | 1·44 | ·65 | — | — | 1·41 | 3·66 | ·51 | ·944 |
| Total | 100·571 | 101·11 | 128·75 | 103·57 | 104·91 | 131·43 | 148·55 | 123·39 | 116·42 | 106·48 | 116·501 |

RAINFALL, BONTHE, 1914-1923.

| MONTH. | 1914. | 1915. | 1916. | 1917. | 1918. | 1919. | 1920. | 1921. | 1922. | 1923. | Average. |
|-----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|----------|
| January | ·12 | — | ·67 | — | ·10 | — | ·02 | — | ·02 | ·02 | ·95 |
| February | — | ·33 | ·80 | 1·89 | — | 0·12 | ·22 | 1·75 | — | ·54 | ·565 |
| March | — | 1·78 | 5·01 | ·86 | 3·48 | 3·90 | 1·92 | ·95 | — | 2·07 | 1·997 |
| April | 4·03 | 12·49 | 2·13 | 1·00 | 5·37 | 5·02 | 4·16 | 2·81 | 5·25 | 4·68 | 4·694 |
| May | 13·40 | 18·23 | 9·96 | 8·62 | 9·97 | 13·96 | 9·03 | 7·44 | 7·20 | 6·38 | 10·419 |
| June | 19·39 | 9·91 | 31·20 | 10·32 | 24·96 | 36·26 | 15·19 | 13·79 | 23·40 | 27·07 | 21·149 |
| July | 22·71 | 39·76 | 37·28 | 20·17 | 22·17 | 15·58 | 30·34 | 23·84 | 20·08 | 23·33 | 25·526 |
| August | 14·42 | 31·68 | 20·46 | 43·54 | 17·57 | 26·42 | 12·71 | 26·51 | 24·90 | 15·47 | 23·368 |
| September | 12·04 | 33·10 | 17·26 | 26·73 | 25·86 | 27·63 | 31·87 | 19·27 | 29·74 | 22·74 | 24·624 |
| October | 12·33 | 7·50 | 13·09 | 9·91 | 8·17 | 12·79 | 9·80 | 8·51 | 15·78 | 17·72 | 11·560 |
| November | 14·21 | 7·95 | 4·55 | 7·36 | 5·41 | 3·66 | — | 8·44 | 14·00 | 8·66 | 7·424 |
| December | 1·30 | ·23 | 2·92 | ·72 | ·92 | — | 2·10 | 2·71 | 3·45 | ·06 | 1·441 |
| Total | 113·95 | 162·96 | 145·26 | 131·12 | 123·98 | 145·34 | 117·36 | 116·02 | 143·82 | 128·74 | 132·862 |

RAINFALL, DARU, 1914-1923.

37

| MONTH. | 1914. | 1915. | 1916. | 1917. | 1918. | 1919. | 1920. | 1921. | 1922. | 1923. | Average. |
|-----------|-------|--------|--------|-------|-------|--------|-------|-------|--------|--------|----------|
| January | ... | — | — | ·02 | ·60 | — | ·21 | — | — | — | — |
| February | ... | ·27 | ·46 | 2·17 | ·46 | ·60 | — | 3·32 | ·36 | ·16 | ·852 |
| March | ... | 8·22 | 2·18 | ·06 | 8·94 | 6·84 | 2·70 | 3·45 | 1·54 | 1·80 | 3·895 |
| April | ... | 8·08 | 4·20 | 7·07 | 18·55 | 7·22 | 4·97 | 5·76 | 10·80 | 6·11 | 8·383 |
| May | ... | 15·58 | 9·89 | 5·20 | 12·99 | 8·85 | 9·31 | 7·08 | 10·00 | 13·11 | 9·615 |
| June | ... | 9·91 | 16·05 | 13·26 | 11·78 | 16·45 | 12·41 | 14·00 | 12·47 | 13·06 | 13·227 |
| July | ... | 11·13 | 16·10 | 13·32 | 9·92 | 7·53 | 7·58 | 7·11 | 11·58 | 18·60 | 10·833 |
| August | ... | 20·34 | 14·61 | 17·65 | 5·04 | 11·78 | 9·60 | 12·26 | 11·11 | 8·05 | 11·964 |
| September | ... | 14·23 | 16·78 | 19·12 | 11·74 | 20·36 | 12·35 | 13·44 | 14·33 | 25·47 | 17·002 |
| October | ... | 13·91 | 7·33 | 6·60 | 0·03 | 6·77 | 20·01 | 12·44 | 15·58 | 9·75 | 10·221 |
| November | ... | 5·11 | 9·25 | 13·55 | 9·55 | 14·47 | 7·90 | 6·11 | 9·76 | 6·36 | 8·916 |
| December | ... | 1·14 | 3·16 | 1·20 | 1·30 | — | ·55 | 1·83 | 4·17 | ·76 | 1·416 |
| Total | ... | 107·92 | 100·41 | 99·22 | 90·90 | 100·87 | 87·59 | 86·80 | 101·70 | 103·23 | 96·334 |

RAINFALL, KABALLA, 1914-1923.

| MONTH. | 1914. | 1915. | 1916. | 1917. | 1918. | 1919. | 1920. | 1921. | 1922. | 1923. | Average. |
|-----------|--------|--------|-------|-------|-------|--------|-------|-------|--------|-------|----------|
| January | ·33 | — | — | ·60 | — | — | — | — | ·30 | — | — |
| February | — | ·10 | ·35 | 2·38 | — | — | — | 1·15 | — | — | ·198 |
| March | ·62 | ·54 | 4·48 | ·25 | 5·53 | 1·80 | ·07 | ·95 | ·50 | 3·00 | 1·774 |
| April | ·120 | 4·46 | 2·16 | 2·72 | 4·71 | 3·35 | ·13 | 4·50 | 7·00 | 4·83 | 3·406 |
| May | 5·42 | 14·24 | 5·80 | 6·55 | 15·03 | 13·60 | ·27 | 6·86 | 4·97 | 5·44 | 7·818 |
| June | 10·70 | 14·74 | 12·29 | 12·93 | 6·59 | 22·41 | ·54 | 10·57 | 11·60 | 15·65 | 11·802 |
| July | 11·28 | 14·91 | ·27 | 16·06 | 12·27 | 13·25 | ·46 | 14·58 | 11·30 | 14·08 | 10·846 |
| August | 7·73 | 14·02 | 15·55 | 16·16 | 11·17 | 13·80 | ·33 | 15·64 | 15·20 | 11·90 | 12·151 |
| September | 24·11 | 20·43 | 18·76 | 13·66 | 10·73 | 18·23 | ·46 | 17·24 | 23·14 | 18·24 | 16·50 |
| October | 12·79 | 9·44 | 5·70 | 14·78 | 11·99 | 10·28 | ·31 | 9·60 | 27·30 | 12·83 | 11·502 |
| November | 8·04 | 7·64 | ·95 | 10·11 | 4·27 | 5·00 | ·20 | 5·10 | 9·10 | 10·91 | 6·132 |
| December | — | ·15 | ·54 | ·72 | 3·00 | — | — | — | 1·50 | 1·56 | ·747 |
| Total | 81·140 | 100·67 | 66·85 | 96·92 | 85·29 | 101·72 | ·277 | 86·20 | 111·91 | 98·44 | 82·876 |

RAINFALL, KISSY, 1914-1923.

| MONTH. | 1914. | 1915. | 1916. | 1917. | 1918. | 1919. | 1920. | 1921. | 1922. | 1923. | Average. |
|-----------|-------|--------|-------|--------|--------|-------|--------|--------|--------|--------|----------|
| January | | — | — | — | .82 | — | — | — | — | — | .87 |
| February | | — | .14 | .27 | — | — | .08 | .08 | — | 1.17 | .174 |
| March | | 1.91 | 1.90 | — | 1.69 | 6.06 | — | .32 | — | .27 | 1.215 |
| April | | 4.34 | 3.55 | 1.70 | 4.12 | 2.00 | .84 | 1.44 | 4.52 | 6.25 | 2.886 |
| May | | 8.14 | 2.30 | 8.03 | 8.42 | 7.31 | 4.98 | 7.75 | 4.53 | 8.55 | 6.672 |
| June | | 10.40 | 12.96 | 7.85 | 15.30 | 4.60 | 14.94 | 11.76 | 18.42 | 15.21 | 12.381 |
| July | | 30.30 | 28.44 | 17.72 | 21.75 | 24.96 | 44.63 | 15.08 | 42.01 | 31.08 | 27.440 |
| August | | 37.26 | 24.80 | 33.95 | 19.50 | 24.64 | 8.73 | 47.77 | 32.53 | 20.74 | 26.830 |
| September | | 48.97 | 15.84 | 24.70 | 17.44 | 19.31 | 23.74 | 19.64 | 29.28 | 20.92 | 23.668 |
| October | | 6.02 | 5.60 | 4.08 | 12.20 | 3.73 | 8.06 | 6.85 | 9.33 | 17.90 | 8.465 |
| November | | 5.21 | 2.17 | 8.18 | 3.27 | 3.32 | 2.67 | 9.26 | 7.84 | 5.00 | 5.401 |
| December | | .05 | 1.58 | .63 | .03 | — | — | 2.40 | 1.79 | .28 | .839 |
| Total | | 152.60 | 99.28 | 107.11 | 104.54 | 95.93 | 108.67 | 122.35 | 150.25 | 127.37 | 116.058 |

RAINFALL, MOYAMBA, 1914-1923.

| MONTH. | 1914. | 1915. | 1916. | 1917. | 1918. | 1919. | 1920. | 1921. | 1922. | 1923. | Average. |
|-----------|-------|-------|--------|--------|-------|-------|--------|--------|--------|--------|----------|
| January | — | — | — | 1·08 | ·99 | ·06 | 1·85 | — | ·13 | ·08 | ·419 |
| February | ·73 | ·35 | ·43 | 1·43 | — | ·53 | — | 1·09 | — | ·61 | ·517 |
| March | ·09 | 1·36 | 4·66 | ·75 | 3·27 | 2·19 | ·83 | ·52 | ·72 | 1·64 | 1·603 |
| April | 1·28 | 5·38 | 1·13 | 4·51 | 6·85 | 4·41 | 2·54 | 3·80 | 3·01 | 2·88 | 3·579 |
| May | 9·37 | 11·32 | 13·44 | 3·90 | 7·32 | 11·09 | 10·46 | 7·33 | 9·39 | 9·58 | 9·320 |
| June | 11·83 | 12·97 | 15·82 | 9·83 | 14·22 | 9·13 | 15·58 | 9·54 | 10·46 | 12·06 | 12·144 |
| July | 11·56 | 16·74 | 27·31 | 14·85 | 12·33 | 13·32 | 40·55 | 12·81 | 16·79 | 16·2 | 18·245 |
| August | 15·25 | 16·69 | 17·80 | 26·49 | 12·09 | 18·82 | 11·50 | 30·76 | 19·10 | 20·11 | 18·861 |
| September | 13·88 | 16·84 | 22·37 | 15·73 | 1·39 | 15·61 | 70·28 | 15·57 | 19·35 | 18·58 | 20·960 |
| October | 8·57 | 11·71 | 14·92 | 14·49 | 9·77 | 13·48 | 16·34 | 11·26 | 11·02 | 15·24 | 12·680 |
| November | 4·56 | 5·44 | 3·68 | 7·21 | 6·71 | 5·21 | 8·73 | 9·38 | 8·26 | 7·99 | 6·717 |
| December | ·07 | ·64 | 4·71 | ·73 | ·18 | — | — | ·65 | 3·33 | 2·79 | 1·310 |
| Total | 77·39 | 99·44 | 126·27 | 100·00 | 75·02 | 93·85 | 178·21 | 102·71 | 101·56 | 107·85 | 106·355 |

PART III.

REPORT ON DIVISION OF FORESTS.

FROM THE ASSISTANT CONSERVATOR OF FORESTS
TO THE COMMISSIONER OF LANDS AND FORESTS, FREETOWN.

SIR,

I have the honour to submit the following report on the forest administration for 1923.

NATURAL FORESTS.

2. The following statement shows the reserves and restricted areas constituted in the Colony and Protectorate up to the end of the year, and in the case of the former, their respective areas. The restricted areas have not been surveyed, so the mileages given are merely estimates.

COLONY.

| Reserves. | | | Restricted Areas. |
|----------------|-----|--------------------|-------------------|
| Colonial | ... | 73.39 square miles | — |
| Leicester Peak | ... | 23 „ „ | — |

PROTECTORATE.

| Reserves. | | | | Restricted Areas. | | | | |
|-------------------|-----|-------|--------------|--------------------|----|--------------|---|---------------------|
| Kessewe Hills ... | ... | 9.01 | square miles | Bumpe ... | 30 | square miles | } | Mangrove |
| Kambui ... | ... | 56.00 | " " | Ribbi ... | 12 | " " | | |
| Nimmini North ... | ... | 48.50 | " " | Yonni East ... | 1 | " " | } | Gum copal areas |
| Nimmini South ... | ... | 10.03 | " " | Kholifa Mabang ... | 1 | " " | | |
| Dodo ... | ... | 8.40 | " " | Yonni West ... | 1 | " " | | |
| Gobo ... | ... | 4.46 | " " | Sennehun West ... | 8 | " " | | |
| Kangari Hills ... | ... | 33.1 | " " | Bafi and Sewa | | | | |
| Moyamba Hill ... | ... | 73 | " " | rivers ... | 20 | " " | | Protective areas |
| Bojene Hills ... | ... | 2.85 | " " | | | | | |

3. The area of reserves in the Colony is therefore 73.62 square miles and in the Protectorate 173.08 square miles, making a total of 246.70 square miles.

4. During the year a valuable addition was made to the area of protected forests by the demarcation of two proposed reserves in the Gola Forest distinguished by the names of Gola East and Gola West. The survey and demarcation of these forests was completed by the month of September, but the formal constitution of the reserves has been hindered by a legal technicality. It is expected, however, that their constitution will be effected early in 1924. While engaged in demarcating these areas the Senior Assistant Conservator of Forests wrote:—

“ The appearance of the Government in the form of the Forest Department, seems to have awakened old memories of their former power, and the paramount chief and several of the sub-chiefs have told me that they hope to regain their old position now that they feel certain of being protected against aggression. It is very pleasing to see Government activity in forming forest reserves not resented but willingly co-operated in, and the presence of uniformed forest guards welcomed.”

5. The area enclosed is 114.85 square miles. This will bring the total area of reserved forests to 361.55 square miles, which is equivalent to 1.32 per cent. of the total area of the country. An addition of approximately eight square miles was made to the restricted areas by the issue of the Bafi and Sewa rivers Order of 1923. This refers to strips a-quarter of a mile wide on each side of portions of the Bafi and Sewa rivers. A part of this area was surveyed in 1922.

6. The following table summarizes the position of controlled forest areas at the end of the year, and includes the Gola Forest demarcated areas.

CONSTITUTED.

| | | | Square Miles. | Percentage of total area of country—27,250 square miles. |
|------------------|-----|-----|---------------|--|
| Reserves | ... | ... | 246·70 | ·9 |
| Restricted areas | ... | ... | 73·00 | ·26 |
| Total | ... | ... | <u>319·70</u> | <u>1·17</u> |

DEMARCATED IN 1923 BUT NOT YET CONSTITUTED.

| | | | | |
|-----------------|-----|-----|--------|-----|
| Reserves. | | | | |
| Gola Forest ... | ... | ... | 114·85 | ·42 |
| (East and West) | | | | |

CONTROLLED FOREST AREAS.

| | | | Square Miles. | Percentage of total area of country—27,250 square miles. |
|---------------------------------------|-----|-----|---------------|--|
| Reserves and } restricted areas | ... | ... | 434·55 | 1·59 |

The increase of 159·53 square miles in one year to the area of protected forests marks 1923 as the most successful year in the short history of forest administration in Sierra Leone.

EXAMINATION OF FORESTS.

7. Further strip enumeration surveys were made during the year in various reserves. In the Kambui Reserve a beginning was made with collecting data on which to base a working plan, but the officer engaged on this work was invalidated before its completion. Figures giving the stocking of the reserve, however, were obtained for most of that part of the reserve lying to the north of the railway, and these will prove of immediate use as a guide for exploitation.

8. In the Gola Forest, strip surveys aggregating 108 acres were made over an area of 114 square miles. The following descriptions are taken from the report of the Senior Assistant Conservator:—

“ The forest is virgin in character with the exception of large areas in the north-east and south-east. Here a close examination shows that the forest is secondary forest of considerable age, giving the appearance of virgin forest at first sight.

“ 7. The tree vegetation is disappointing when the presence of so many conditions favourable to good growth is considered. The soil is good and well watered, and the country is mostly flat, yet the stand of timber is inferior to that found in the Kambui Hills reserve or the reserves in the Konno District of the Central Province, which are hilly and have but poor soil of little depth.

“ 8. . . . strip surveys show a number of overold and over-mature standards that were left when farming was formerly carried on, a certain portion of class II containing trees which for some reason, generally difficulty in felling, have been left, and a large proportion of classes III and IV.

“ 11. The strip surveys show the poorness of the whole area in timber trees of good value. The most common useful tree is *Oldfieldia africana*, the so-called African oak, which produces a very hard, dense and heavy timber with a rather uninteresting grain. The ages of gradation of this species are less uneven than usual. Other good timber trees not uncommon are:—Behan, Bimini, Kaikombe and Billi. These are, so far, undetermined species. No mahoganies were found and only one species of *Entandrophragma*.”

9. The same report contains a note on the lines of export from this area:—

“The Mano, Morro and Maho provide a means of export from the reserve which could be used during the rains. The map shows many rapids . . . but these could, I am sure, be safely negotiated.”

FOREST EXPLOITATION.

10. No systematic exploitation of timber has yet been undertaken, but arrangements have been made to endeavour to meet some of the needs of the timber-using Government departments, from the Kambui Hills reserve near Kennema.

11. Eleven trees, most of them of large size, were extracted from the Kessewe and Kambui Hills reserves to provide timber for the construction and equipment of the Sierra Leone building at the British Empire Exhibition in 1924.

12. Ten logs of monkey-apple (*Anisophyllea laurina*) were despatched to England from the neighbourhood of Moyamba, with the object of discovering if there was a market for this readily obtained timber. Beyond the instances mentioned above, the only other exploitation was of individual trees by licensees in the Colonial reserve.

13. MINOR PRODUCE.—The gum copal reserves and restricted areas were thrown open to licensees for tapping on the 3rd October. The Senior Assistant Conservator issued 115 licences, and reported that on account of the late and heavy rains, the licensees wished to have the tapping season extended beyond the end of the year.

14. The exuding gum is allowed to dry on the trees until the end of the dry season and so gum copal does not figure in the export returns for 1923.

15. The remaining shade trees were removed from the older plantations of gum copal in the Kessewe reserve and the planted area further extended.

LEGISLATION.

16. No new forest legislation was passed during the year, but Governor's Orders constituting the Kangari, Moyamba and Bojene Hills reserves were issued. The Restricted Area (Bafi River) Order, 1921, was rescinded and a new Order termed the Restricted Area (Bafi and Sewa Rivers) Order was issued to take its place.

HERBARIUM.

17. This has been maintained and added to by the officers of the division, a number of specimens being sent to Kew Gardens for determination.

ADMINISTRATION.

18. STAFF—*Conservator of Forests*.—This office was held in abeyance during the year.

Senior Assistant Conservator.—K. Burbridge.

Assistant Conservators.—E. MacDonald and D. G. Thomas.

Mr. Burbridge proceeded on leave to the United Kingdom on the 26th December. Mr. MacDonald was on leave from the 8th August onwards. Mr. Thomas was invalided on the 27th June; he returned on the 8th December.

REVENUE.

19. LICENCES:

| | | | £ | s. | d. |
|-----|-------------------------|--------|-------|----|----|
| (a) | Gum copal—tapping of | | 77 | 10 | 0 |
| (b) | Timber, etc.—cutting of | | 50 | 6 | 0 |
| | | | <hr/> | | |
| | | | 127 | 16 | 0 |
| | | | <hr/> | | |

EXPENDITURE.

| PERSONAL EMOLUMENTS : | | | | | | £ | s. | d. | £ | s. | d. |
|--------------------------------|-----|-----|-----|-----|-----|-------|----|----|-------|----|----|
| Salaries | ... | ... | ... | ... | ... | 2,372 | 17 | 1 | | | |
| African assistants | ... | ... | ... | ... | ... | 2,003 | 16 | 1 | | | |
| Local allowance | ... | ... | ... | ... | ... | 2 | 2 | 3 | | | |
| Seniority pay | ... | ... | ... | ... | ... | 70 | 16 | 9 | | | |
| | | | | | | | | | 4,449 | 12 | 2 |
| OTHER CHARGES : | | | | | | £ | s. | d. | | | |
| Contingencies | ... | ... | ... | ... | ... | 23 | 18 | 0 | | | |
| Labour | ... | ... | ... | ... | ... | 896 | 5 | 6 | | | |
| Seeds and seedlings | ... | ... | ... | ... | ... | 0 | 13 | 7 | | | |
| Surveying instruments | ... | ... | ... | ... | ... | 13 | 10 | 1 | | | |
| Tools | ... | ... | ... | ... | ... | 73 | 6 | 7 | | | |
| Transport and passages | ... | ... | ... | ... | ... | 595 | 5 | 4 | | | |
| Hammock allowance | ... | ... | ... | ... | ... | 56 | 2 | 6 | | | |
| Travelling and bush allowance | ... | ... | ... | ... | ... | 273 | 2 | 0 | | | |
| Uniform for forest guards | ... | ... | ... | ... | ... | 164 | 0 | 8 | | | |
| Quarters for subordinate staff | ... | ... | ... | ... | ... | 91 | 8 | 5 | | | |
| Motor cycle allowance | ... | ... | ... | ... | ... | 26 | 3 | 4 | | | |
| | | | | | | | | | 2,213 | 16 | 0 |
| | | | | | | | | | 6,663 | 8 | 2 |

GENERAL.

20. Towards the latter part of the year arrangements were made to divide the country for the purposes of forest administration into four working circles, each in charge of an assistant conservator as executive officer, the scheme to come into operation with the new year. The circles were designated eastern, western, northern and southern, and the three officers then available were asked to submit estimates and plans of operation—the Senior Assistant Conservator for the western, Mr. MacDonald for the southern, and Mr. Thomas for the eastern, the northern circle being left vacant until the arrival of a fourth officer. The urgency having arisen of dealing with an extensive area of forest on the borders of the Northern and Central Provinces, on the arrival of Mr. Thomas from leave in December he was instructed to undertake the preliminary survey of this forest area and to organize the northern circle.

21. This marks a distinct epoch in the history of forest administration in this country. It means that we are now within sight of having reserved all the available primeval forest in the more populous southern parts of the country. In this region it was necessary to pursue the work of reservation with energy and speed lest in a very few years the area of surviving virgin forest could be reckoned in acres merely. When a native community has decided to convert a block of forest into farm land, it is difficult to convince it of the necessity for considering the accumulated effect of deforesting the whole country on its future prosperity.

22. With the inclusion of the Gola Forest reserves (unconstituted), the total area of protected forest lands in the country now amounts to 1.59 per cent. of the whole area. In certain European countries and in India the percentage of controlled forests varies from 3 to about 40 per cent., and 25 per cent. is generally regarded as the desirable minimum.

23. With the exception of India, none of these countries has the heavy rainfall and the high temperatures of Sierra Leone. The one element denudes exposed hill-sides of their soil, and the other decomposes at an excessive rate the organic matter essential to plant-life. The prosperity of Sierra Leone is wholly dependent upon its plant-life, and its latitude and climate demand that its characteristic flora be retained.

24. About 430 square miles of forest lands are now protected by the Government. It is estimated that between 600 to 700 square miles of high forest lies outside the control of the department. Of this, there are only about four areas of any size that might be reserved with the consent and goodwill of the people within whose jurisdiction the areas lie. The

remaining areas of forest are for the most part mere patches that have so far survived on account of superstition or lack of labour, both of which reasons will lose their effect under economic pressure.

25. It is estimated therefore that no more than about 3·5 per cent. of the original forests of this country now survive. This, in contrast to the percentage of forest which is maintained in more advanced countries, is one indication that the policy of reservation must still be resolutely pursued.

26. A traveller in the southern half of the Protectorate will see the face of the country almost completely clothed with tree vegetation, and he may think that this "bush" will always reassert itself. Trained observers do not take this view, and even casual observation will reveal the deterioration of the flora that is taking place. A semi-official envoy, who has recently travelled extensively in tropical and sub-tropical Africa, states that the aridity of the Sahara is steadily extending south. It is the opinion of the writer that the Sahara will one day have the Gulf of Guinea as its southern extremity, and that human skill will not avail to prevent this. The immediate concern of the present generation is to postpone the effects of such a change as long as possible, and unless this tropic belt is to lose its character and its value in the economic scheme of the world, its main feature, its vegetation, and its forest vegetation must be not only maintained, but increased and improved.

27. With the reservation of such areas in the north, as the Tonkoli forest and Loma mountains, close contact is made with the enemy that threatens the life of the country. In these areas that lie on the borderland between the tropical rain forest and the savannah, grass and inferior herbage is everywhere thrusting itself strongly into the heart of the high forest. When these areas, and other smaller areas still further north, are reserved, they will help to form a bulwark against the arid conditions that exist on their northern and eastern sides. Moreover, the rivers of Sierra Leone have their sources in the north and east of the country. The effect of retaining the forest is that (a) the impact of torrential rain is broken by the leaf canopy, and (b) the porous and humus-covered forest floor readily absorbs the water, permitting it to emerge at lower levels as perennial springs. The contrary effect, when heavy rains fall on bare hill-sides, carrying away what soil there is, and causing sudden floods that submerge the lower lands, is obvious and well known.

28. Although the average annual area brought under protection has this year been increased from 25 to 36·21 square miles per annum, if the facts thus briefly outlined be correlated, it will be seen that much work still lies before the forest administration. The beneficent objects of forest reservation are becoming more generally understood, and the sympathy and co-operation of the political officers and of the more enlightened members of the native communities is more readily given, thus smoothing the always difficult and arduous path of the forest officer.

I have the honour to be.

SIR,

Your obedient servant,

D. G. THOMAS,

Assistant Conservator of Forests.

FREETOWN,

20th February, 1924.

PART IV.

REPORT ON THE DIVISION OF PLANTS AND PRODUCE INSPECTION.

FROM THE INSPECTOR OF PLANTS AND PRODUCE
TO THE COMMISSIONER OF LANDS AND FORESTS.

SIR,

I have the honour to submit the annual report for 1923 on the Inspection of Plants and Produce Division of the Lands and Forests Department.

I—STAFF.

2. The Inspector of Plants and Produce, Mr. G. Tuach, proceeded on vacation leave on the 16th May and returned to the Colony on 13th October.

AFRICAN SUB-INSPECTORS.—Mr. S. T. Maddy, Lassi Inga and Binneh Fabundeh were appointed Sub-Inspectors of Produce in January and after a three months' course of instruction under the inspector, were allocated to districts as follows:—

Mr. S. T. Maddy—Freetown area.

.. Lassi Inga—Northern and Central Provinces.

.. Binneh Fabundeh—Bonthé and Southern Province.

3. During the absence on leave of the Inspector of Plants and Produce the work of the sub-inspectors was supervised by the Commissioner of Lands and Forests.

II—TOURS OF INSPECTION.

4. In January the inspector made a tour of inspection of the trade centres in the eastern area of the Northern Province and reported an improvement in the quality of the produce and a general improvement in the trade of the district. During February he toured the Central Province from Moyamba to Pendembu. This was the first visit of a produce inspector to the Central Province and resulted in nine convictions with fines amounting to a total of £103. From March to the end of April he toured the Southern Province and reported a general improvement in the quality of the produce. Only one case of adulteration was reported. During this tour special attention was given to the piassava industry, a report on which was submitted to the Commissioner of Lands and Forests, with suggestions for the better preparation and general improvement of the fibre.

Experiments in this connection were carried on later in the year, the results of which are not yet available.

Throughout these tours the Inspector of Plants and Produce was accompanied by the sub-inspectors who were instructed in their duties.

On the return of the inspector from leave he made a tour among the ginger growers in the Central Province and instructed them in the peeling and better preparation of ginger, with a view to improving the quality and market value of this product.

III—TOURS OF INSPECTION BY SUB-INSPECTORS.

5. Sub-Inspector S. T. Maddy was responsible for the inspection of produce in Freetown from May to the end of the year. He made a tour of inspection in the Waterloo District in September with a view to detect persons dealing without a licence. The tour resulted in the issuing of seventeen licences. During the year he reported five persons for offences against the Ordinance and obtained three convictions.

6. Sub-Inspector Lassi Inga was responsible for the inspection in the Northern and Central Provinces from May to the end of the year. He made alternate monthly tours of each province and reported twenty-four persons for offences against the Ordinance, twenty-one of whom were convicted.

7. Sub-Inspector B. Fabundeh was stationed at Bonthe and was responsible for the inspection of produce in the Southern Province from May to the end of the year. He toured each district in the province alternately and reported nineteen persons for offences against the Ordinance and obtained seventeen convictions.

8. The following is a return of convictions and fines imposed during the year:—

| No. of Persons Reported. | No. Convicted. | No. Discharged. | Total Amount of Fines. |
|-----------------------------|-------------------|--------------------|---------------------------|
| 58 | 51 | 7 | £201 |

IV—PRODUCE LICENCES.

9. At the beginning of the year new regulations governing licences came into operation, which required all licences issued thereunder to expire on the 31st December. There were, however, a large number of licences in existence which had been issued on various dates during the preceding year and did not expire until the corresponding dates of the year under review. For the renewal of these licences only a proportionate fee was payable to the end of the year. There was therefore a slight decrease in revenue obtained from produce licences for 1923, as compared with 1922.

V—REVENUE AND EXPENDITURE.

10. The following is a statement showing the approximate revenue and expenditure during the year:—

| (a) REVENUE. | | | | | | | |
|---------------------|-----|-----|-----|-----|-----------|----|----|
| | | | | | £ | s. | d. |
| By produce licences | ... | ... | ... | ... | 1,112 | 7 | 3 |
| „ fines | ... | ... | ... | ... | 201 | 0 | 0 |
| | | | | | <hr/> | | |
| | | | | | 1,313 7 3 | | |
| | | | | | <hr/> | | |
| (b) EXPENDITURE. | | | | | £ | s. | d. |
| Personal emoluments | ... | ... | ... | ... | 590 | 0 | 0 |
| Other charges | ... | ... | ... | ... | 127 | 0 | 0 |
| | | | | | <hr/> | | |
| | | | | | 717 0 0 | | |
| | | | | | <hr/> | | |

VI—EXPORT OF PALM KERNELS.

11. The palm kernel trade throughout the year has been specially good. Prices ranging from £13 to £15 10s. per ton being obtainable in Freetown. The year can be looked upon as the best the trade has seen since the slump. The export of palm kernels for the year is also a record. The total quantity shipped from all ports greatly exceed any previous year.

12. The following figures show the export of palm kernels from Freetown and Sherbro during the year 1923:—

| FREETOWN. | | SHERBRO. | | TOTAL. |
|------------------|-------------|------------------|-------------|--------|
| WEIGHT. Tons. | VALUE. £ | WEIGHT. Tons. | VALUE. £ | |
| 42,294 | 693,070 | 17,251 | 275,727 | 59,545 |

The exports for the preceding years were as follows:—

| 1918, Tons. | 1919, Tons. | 1920, Tons. | 1921, Tons. | 1922, Tons. |
|----------------|----------------|----------------|----------------|----------------|
| 40,816 | 50,622 | 50,425 | 40,409 | 49,029 |

It was suggested in several quarters, when produce inspection was first introduced, that too rigid enforcement of the Ordinance would retard production. It is therefore satisfactory to note from the above figures that produce inspection, instead of hampering the trade, has done much to enliven it.

VII—GENERAL.

13. The only native produce which at present comes under the "Native Produce Ordinance" is palm kernels. It has been proposed, however, to extend the principles of inspection to other products of export importance, such as palm oil, ginger, piassava and chillies. Of these products ginger and piassava are most urgently in need of attention.

14. SIERRA LEONE GINGER, as it is known in the trade, is of very poor quality. This is due to the careless manner in which it has been prepared in the past.

With a view to improving the quality and market value of the product, extensive propaganda was launched by the Commissioner of Lands and Forests during the latter part of the year.

In this connection the writer travelled among the ginger growers in the Central Province and gave practical demonstration in the proper method of peeling, drying and bleaching ginger. Before the close of the year some improvement was evident, and it is hoped that by following up this propaganda systematically great improvement in the 1924 crop will be the result.

15. PIASSAVA.—This fibre has been very carelessly prepared and for this reason the trade has suffered severely. Experiments were commenced in the Southern Province in August to ascertain the time necessary for retting to facilitate the proper separation and preparation of the fibre in pools, streams and brackish water, respectively, but are not yet completed.

It is hoped, when the results of these experiments are known, to introduce an improved method of preparation and in this way improve the quality and increase the demand.

16. PALM OIL.—The Sherbro palm oil still continues to occupy a favourable position on the European market. The local price during the year ranged from 7s. to 14s. per tin of four gallons. Throughout the year the reports from merchants on the quality of the oil were very favourable. No cases of adulteration were reported.

17. PEPPERS (Chillies).—The production of chillies has developed considerably, so much so that the supply now exceeds the demand.

During the season 1922—1923 prices maintained a high level, ranging from 18s. to 25s. per bushel. The season 1923—1924, which is now on, opened with greatly reduced prices, 7s. per bushel being the highest offered. This is due to the fact that large quantities of last season's crop are still lying on the English and American markets unsold.

18. In conclusion, I wish to express my appreciation of the satisfactory manner in which the sub-inspectors have carried out their duties throughout the year, especially the sub-inspectors who were responsible for the inspection in the Protectorate.

I have the honour to be,

SIR,

Your most obedient servant,

GEO. TUACH,

Inspector of Plants and Produce.

